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District 1 Freight Plan

Working Paper 3: Needs, Issues, and Opportunities

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Minnesota Department of Transportation

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Solutions for growing economies

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District 1 Freight Plan

The objective of the District 1 Freight Plan (Plan) is to provide a clear understanding of the multimodal freight system, how local industries use the system and their needs and issues, so MnDOT's policy and programming decisions can be better informed in the District.

Working Paper

This Working Paper is the third in a series of five that together inform the Plan. This Working Paper identifies specific and general needs and issues for the District 1 transportation system, as well as potential projects, programs, policies, and partnerships to improve the condition and operation of the system.

Acknowledgments

The CPCS Team acknowledges and is thankful for the input of those consulted in the development of this Working Paper, as well as the guidance and input of representatives from MnDOT and their study partners.

Opinions

Unless otherwise indicated, the opinions herein are those of the authors and do not necessarily reflect the views of MnDOT.

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Cover image source: CPCS

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Acronyms and Abbreviations

BNSF	Burlington Northern and Santa Fe Railway
BUILD	Better Utilizing Investments to Leverage Development
CHIP	Capital Highway Investment Plan
CNG	Compressed Natural Gas
CSAH	County State Aid Highway
DSMIC	Duluth-Superior Metropolitan Interstate Council
EIA	Energy Information Administration
GDP	Gross Domestic Product
GHG	Greenhouse Gas Emissions
GPS	Global Positioning System
LNG	Liquefied Natural Gas
MPO	Metropolitan Planning Organization
MHFP	Minnesota Highway Freight Program
MRSI	Minnesota Rail Service Improvement Program
NAFTA	North American Free Trade Agreement
NSSR	North Shore Scenic Railroad
OFCVO	Office of Freight and Commercial Vehicle Operations
OSOW	Oversize Overweight
RQI	Ride Quality Index
STEEP	Social, Technological, Environmental, Economic, Political
STIP	State Transportation Improvement Program
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TIGER	Transportation Investment Generating Economic Recovery
TIP	Transportation Improvement Plan
TPI	Twin Ports Interchange
UPS	United Parcel Service
US	United States
USMCA	United States Mexico Canada Agreement

Executive Summary

Understanding District 1's current freight needs, issues, and opportunities is essential to ensuring that future investments effectively maintain or improve the system. Additionally, anticipating future needs and issues can help MnDOT and its partners further improve planning and investment decisions. This Working Paper provides an overview of current and potential future needs, issues, and opportunities, analyzes where existing transportation projects may provide freight transportation benefits, and makes recommendations for specific policies, programs, projects, and partnerships that MnDOT could leverage to improve the freight system.

Current Needs and Issues

District 1's freight system has a variety of needs and issues, most of which are focused on the road network. In particular, both stakeholder and data analysis reveal many issues related to roadway safety, including truck operations issues due to their slower-moving relative to passenger traffic. As a result, safety-related improvement such as passing lanes and harder or wider shoulders were often mentioned as solutions by stakeholders consulted.

By comparison, there were relatively fewer needs and issues related to the topics of mobility or condition. Congestion is not a problem in the District, and relatively common mobility concerns related to weight limits and bridge clearances for large trucks were identified. In terms of system condition, pavements do have issues but analysis found that all will be addressed as part of future capital plans. District 1 does have a large number of structurally-deficient bridges, but these are concentrated on local roads, and do not appear to be an impediment to freight movement.

A top need for Minnesota is reliable and flexible funding that can be used toward freight projects. While the 2018-2037 MnSHIP marks the first time MnDOT has identified dedicated freight funding for projects, it is only due in part to Federal legislation that funds projects through 2022, and may not be renewed. MnDOT has developed maritime and rail grant and loan programs to address freight system needs where traditional highway system funds could not, but these funds continue to be inadequate compared to the need. In several cases these programs are dependent on action by the Legislature to provide funding.

Anticipating and Interpreting Future Changes

District 1's freight system and freight operations are closely intertwined with the US, Canadian, and global economies, and changes in District 1's system and operations are influenced by a wide combination of Social, Technological, Environmental, Economic, and Political (STEEP) factors. Given the complexity of supply chains and the factors that affect them, it can be difficult to forecast how freight system use may change in the future. However, these STEEP factors provide a "lens" through which future changes may be anticipated and interpreted. Some potentially-impactful future trends for District 1's freight system include the adoption of new manufacturing processes, climate change and changing energy sources, and the implementation of new foreign trade agreements or tariffs. Trends such as these may provide indication of some of the threats and opportunities the District may face in the future.

Strengths, Weaknesses, Opportunities, and Threats (SWOT)

Using identified needs and issues, along with the STEEP factors provides a picture of District 1's freight-relevant Strengths, Weaknesses, Opportunities, and Threats (SWOT). This Working Paper's SWOT analysis focuses on economic, mobility, condition, safety, social, and environmental elements. Analysis and inventory of these SWOT elements informed the development of specific recommendations. A foundational strength of District 1 is its multimodal assets and their connections to North American markets. However, a foundational weakness is the need to maintain these assets in the face of uncertain funding sources or levels.

Opportunities for Improvement

The analyses presented in this Working Paper demonstrate that while District 1's freight system is not without its needs and issues, it also has many advantages, and there are opportunities to improve the system. Opportunities can be broken down into four types:

- **Projects** including infrastructure maintenance, improvement, and expansion.
- **Programs** designed to improve information about freight operations in the District.
- **Policies** to govern development and operation of the freight system.
- **Partnerships** with local stakeholders to better understand needs and issues, and implement or advance strategies to improve the system.

Projects are the area where MnDOT has an opportunity to make impactful physical system changes. An assessment of gaps between freight needs and issues and planned transportation improvement projects is shown in Figure ES-2. Generally, there was a high level of overlap between identified freight needs and issues, and planned transportation projects (although these projects are not intended to specifically address freight needs and issues). Currently, there are about 151 identified freight needs and issue points on District 1's system that are not affected by programmed projects, compared with 195 needs and issues that overlapped with state or local funding projects. Notable gaps between programmed projects and needs and issues include:

- **Safety** gaps were the most common gap, making up two-thirds of the identified gaps. These were distributed across almost all areas of the District, but were particularly focused on smaller highways in St. Louis and Itasca Counties, as well as around Duluth. *Note, capital improvement plans for these counties were not available at the time of this writing for screening. Some of these gaps may be eliminated as new information is received.*
- **Performance** related gaps only made up about 12 percent of identified gaps, and all had to do with problems related lack of mobility/maneuverability at low-clearance bridges. These problems were primarily concentrated around the Duluth area.
- **Condition** gaps made up about one-fifth of identified gaps, and included 18 bridges identified as potentially deficient, as well as 15 issues identified by stakeholders or previous plans. Interestingly, few pavement condition gaps were found, which supports feedback from District 1 staff who noted that the District was proactive in programming improvements to address pavement needs.

Funding

While the 2018-2037 MnSHIP includes dedicated freight funding for projects, this funding may not be available beyond 2022. Going forward, MnDOT will need to examine options for advancing freight-benefitting projects without these dedicated freight funds. One option is to examine freight projects through traditional MnDOT funding program lenses to determine their applicability.

The MnSHIP identified 5 primary investment objectives and 10 investment categories, one of which is freight, as shown in Figure ES-1. In the event the freight investment category is unavailable in the future, the analysis in this Working Paper has identified key links between roadway freight system needs/issues and three primary investment objectives – System Stewardship, Transportation Safety, and Critical Connections – and has shown than many types of highway transportation projects are in fact freight-benefitting projects. The figure illustrates the number of projects and type of funding that could potentially be used to address District 1's unfunded freight needs.

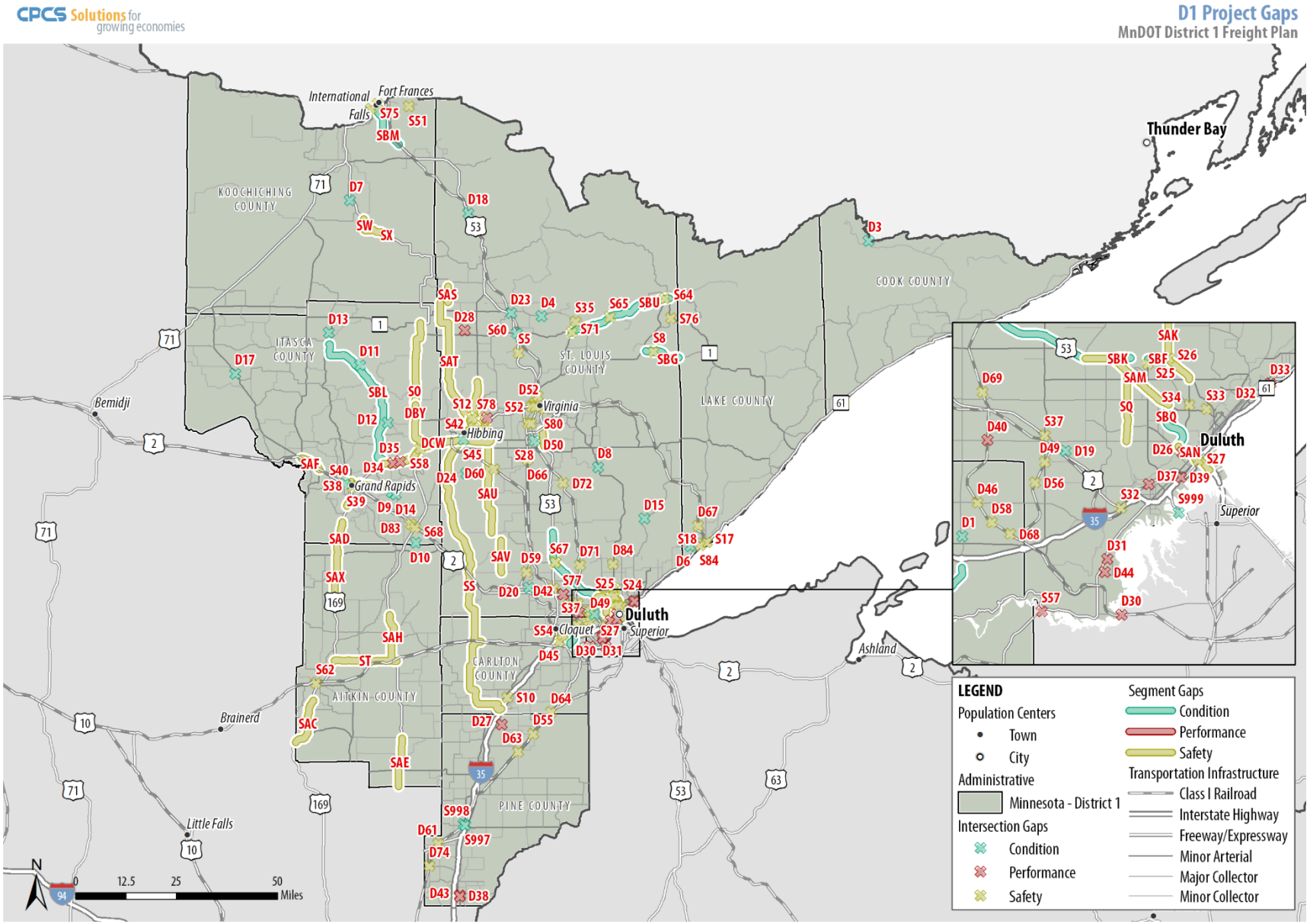
Figure ES-1: 2018-2037 MnSHIP Investment Objectives and Categories Aligned with District 1 Freight Needs

Investment Objective	Investment Category	Applicable D1 Freight System Need	Number of Project Types Identified in Gap Analysis
System Stewardship	Pavement Condition	Pavement Condition	11
	Bridge Condition	Bridge Condition	21
	Roadside Infrastructure	• Signage • Traffic Signals/Controls • Other Technology and information management systems	9
	Jurisdictional Transfer	N/A	N/A
	Facilities	Weigh station and commercial vehicle enforcement	1
Transportation Safety	Traveler Safety	• Sustained crash locations • Rail-highway crossings	36
Critical Connections	Twin Cities Mobility	N/A	N/A
	Greater Minnesota Mobility	• Intersections • Passing or Turning Lanes • Corridors • Roundabouts • Redundancies	68
	Freight	***N/A***	***N/A***
	Bicycle Infrastructure	N/A	N/A
	Accessible Pedestrian Infrastructure	N/A	N/A
Healthy Communities	Regional and Community Improvement Priorities	• First and Last-Mile Connections • Truck and HazMat Routing	1
Other	Project Delivery	N/A	N/A
	Small Programs	N/A	N/A

Note: This evaluation assumes that a dedicated freight investment category will not be available in the future.

It is acknowledged that while freight projects could potentially align with MnSHIP funding categories, this does not mean there will be funding available to advance all projects due to the overall state transportation funding shortfall. However, the information in this Working Paper is intended to be an opening to a broader conversation on freight project funding; specifically that many different types of transportation projects provide freight benefits, and that coordination with freight stakeholders, including MnDOT's Office of Freight and Commercial Vehicle Operations, should be part of statewide investment planning.

Figure ES-2: Needs and Issues Not Covered by Expected Projects



Source: CPCS analysis of MnDOT STIP and CHIP; DSMIC TIP, Pine and Aitkin County Investment Plans, MnDOT Safety and Condition data; District 1 Manufacturer's Perspectives Study.

1 Future Outlook

Key Findings

Freight supply chains and the resultant use of the freight system are influenced by a wide combination of Social, Technological, Environmental, Economic, and Political (STEEP) factors. Given the complexity of supply chains and the factors that affect them, it can be difficult to forecast how freight system use may change in the future. However, these STEEP factors provide a "lens" through which future changes may be interpreted, and potential changes anticipated. Some potentially-impactful future trends for District 1's freight system include the adoption of new manufacturing processes, climate change and changing energy sources, and the implementation of new foreign trade agreements or tariffs.

1.1 External Factors and their Influence on the Freight System

The freight system, including the transportation network, shippers, and carriers is reactive; freight operations reflect the market impacts of a variety of external factors such as economic or political changes. For example, political choices to invest in the Interstate Highway system in the 1950s helped make trucking a cost-competitive mode for long-distance shipment of higher-value goods, and helped enable a major mode shift from rail to truck. The aggregate market impact of factors like these determines how the freight system operates and changes.

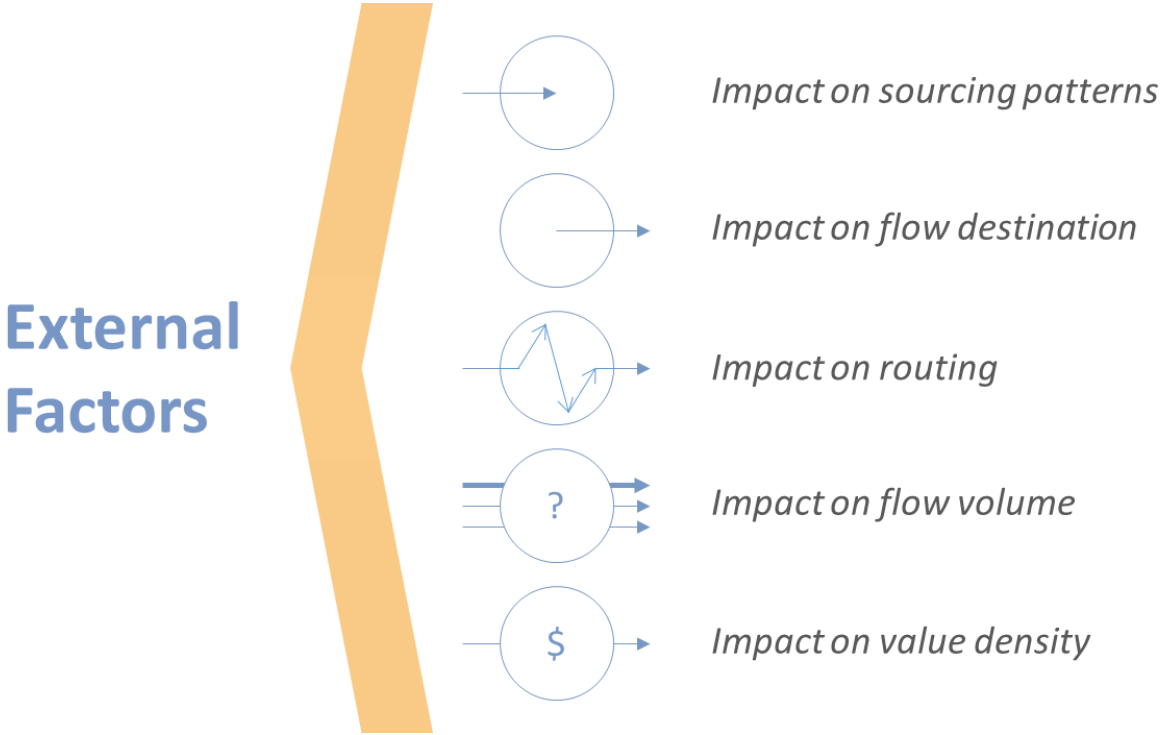
Freight supply chains and industry operations reflect market conditions that are determined by a myriad of potential factors. Understanding major factors can help planners anticipate potential freight changes in the future.

The freight system is continually changing and adapting to best meet market demands. It can be difficult to determine exactly how the freight system will change in the future because the specific factors that influence demand are numerous and difficult to forecast. However, that there are a number of "lenses" through which the freight system impacts of potential factors can be interpreted or anticipated. As shown in Figure 1-1 external factors can influence the freight system in several ways, including:[1]

[1] Chris Caplice, Massachusetts Institute of Technology

- **Sourcing patterns.** Factors may impact what raw materials and other inputs are sourced and where they are sourced from (i.e. origination).
- **Flow destination.** Factors may impact where materials and other goods are destined for manufacturing, consumption or other uses (i.e. termination).
- **Routing.** Factors may impact how goods are moved within a region, and if the routing is direct, via a single mode and if there are intermediate transfer points on the route.
- **Flow volume**. Factors may impact the total volume of freight shipped within and through a region.
- **Value density.** Factors may impact product characteristics and the value of goods shipped.

Figure 1-1: External Factors and Potential Impact to the Freight System

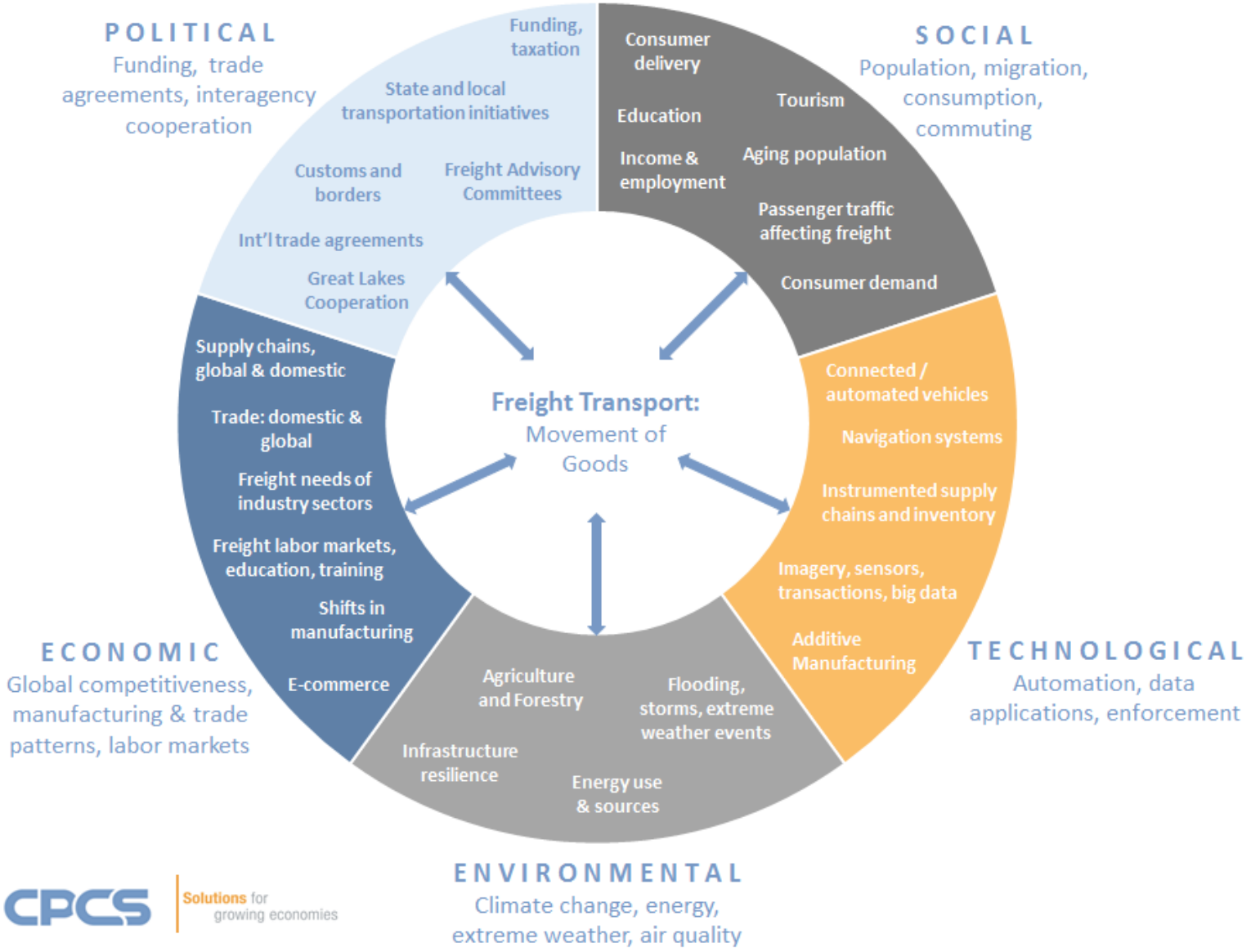


Source: Adapted from Chris Caplice, Massachusetts Institute of Technology

External factors are often categorized using the "STEEP" terminology which reflects Social, Technological, Environmental, Economic, and Political considerations, shown in Figure 1-2. While on the surface these factors may not all appear to be directly linked to freight, each has a role in influencing freight system sourcing, destinations, routing, volume and density in some way and provides insight to future freight system needs, issues, and opportunities.

The following subsections provide examples of how historic trends and current developments may impact the District 1 freight system in the future. Note that these examples are provided for context and are not intended to be exhaustive. Instead, these examples show how the STEEP framework can be applied to understand a variety of potential changes to the freight system. A summary of potential impacts by STEEP factor is provided in Figure 1-6.

Figure 1-2: External Factors Influencing Freight Transport

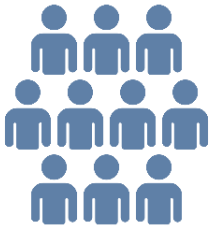


CPCS Solutions for growing economies

1.1.1 Social Factors and Trends

Social factors are broad and include demographics, income, consumption patterns, and population location and density. Several social trends previously presented in Working Paper 2 provide insight into future freight system demand that is linked to consumer activity/needs:

Population



The population of District 1 as a whole is aging and some areas have shrinking populations. While productivity has increased in places such as the Iron Range, it has become more difficult for some companies find employees. For example, local firms are occasionally forced to retain poorly-performing employees due to an inability to find replacement workers.[2] Also, some economic development agencies are seeking to entice current residents to stay or new residents to relocate. For example, Koochiching County created a campaign called "Your Ticket Home" to reach out to people at class reunions and on social media after compiling a database of people who grew up in Koochiching County.[3]

Income

Household income increased steadily across District 1 between 2010 and 2016, with Koochiching seeing the largest increase of 13.5 percent, followed by Lake County at 11.9 percent. The median household income in the District is $49,391 which is lower than Minnesota's median of $63,217. Unemployment has steadily declined as well, but some District 1 counties are in "economic distress" which means further economic assistance may be needed. This "distress" classification may qualify some areas for additional funding such as infrastructure or educational investments to improve the regional economy.

Education

Like an increase in income, there has been an increase in residents' level of education between 2010 and 2016. The share of residents that have "Some college, or an Associate's degree" and "Bachelor's degree or higher" has increased, while the number of residents with "No high school diploma" has decreased.

A summary of potential impacts due to Social factors is provided in Figure 1-6.

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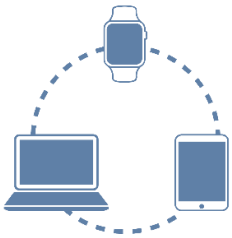
[2] Consultation with Carlton County Economic Development Association

[3] Kaul, G "Can Koochiching County come back from brink of demographic doom?" May 16, 2017 https://www.minnpost.com/politics-policy/2017/05/can-koochiching-county-come-back-brink-demographic-doom/

1.1.2 Technological Factors and Trends

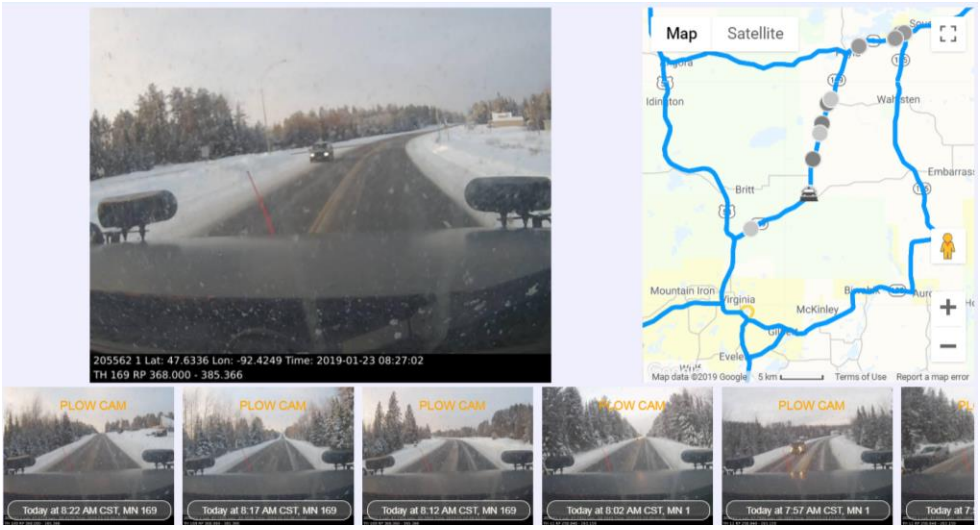
Technological factors include those that may generate new (alternative) products or services, increase the availability or lower the cost of current products or services, or change the nature of production processes, transportation and distribution activities, and information flows. New technologies may also improve the efficiency of local industries, but this improved efficiency may not translate into demand for additional workers. Technology advancements generally related to "smart" or "connected" technology in the fields of manufacturing and freight transportation operations are changing rapidly, and will be extremely influential in how the freight system is used, studied, and improved in the future. For example, the rapid adoption of in-vehicle GPS tracking equipment and the development of analytical software has made detailed traffic analyses (such as provided in Working Paper 2) increasingly easy and affordable for DOTs, which in turn has informed improved operations and investment decisions.

Smart Technology



The proliferation of smart technology – smartphones, wearable devices, as well as the rise of the "Internet of Things" – sensors and actuators embedded in physical objects that are linked through wired and wireless networks – will continue, providing increasing information connectivity. In the transportation sector, this smart technology includes mapping applications on smartphones, in-vehicle GPS units, and roadside data collection systems such as cameras equipped with vehicle-recognition software, or weigh-in-motion systems. These transportation technologies are generating a wealth of data for both private and public stakeholders. Additionally, their real-time nature is helping to improve operations, including timely incident response and management, truck availability communications, and plowing operations. Figure 1-3 provides an example of one type of "smart" technology, MnDOT's publicly-available "plow cams."

Figure 1-3: MnDOT Plow Cam System



Source: MnDOT 511 Traveler Information. 2019.

New Transportation Data

The "big data" created by many new "smart" transportation technologies is helping public and private transportation stakeholders improve their understanding of the transportation system. In turn, this new knowledge is enabling more efficient operations and improved investment choices. For example, trucking companies are using GPS tracking systems to monitor their fleets and collect data on truck speed, location, fuel consumption, and safety. This speed and location data can be used to alter delivery routes to avoid congestion, or inform future route planning. Archives of data such as this are also being used by the public sector. For example, Working Paper 2 used anonymized and aggregated GPS truck tracking data from StreetLight Data to map and evaluate truck congestion in District 1. As transportation-related "smart" or connected technology continues to spread, it is likely to have further impacts on operations and investment decisions.

Blockchain technology also holds promise for its ability to help businesses manage their supply chains by providing a means of securely collecting and distributing information about the movement of goods through a supply chain. For example, Walmart uses blockchain systems to track the movement of imported pork, tracking aspects such as where the meat was grown, where it was processed, where it was shipped, and its sell-by date.[4] In the future, anonymized and aggregated supply chain information with access controlled by blockchain protocols could become a valuable data source for transportation planning work.

Connected and Autonomous Vehicles

Autonomous and driverless vehicles are likely to become integrated components of transportation systems for both freight and passenger users in the future. Nearly a dozen companies are currently testing driverless cars, and for freight, (semi-) autonomous trucking is being spearheaded by a handful of companies including Volvo, Daimler, Peloton and others, with fully autonomous trucking on the near-term horizon. Adoption of connected and autonomous vehicles is likely to have impacts on traffic safety, trucking company business models, and as overall use of the transportation system.

Movement of Goods

Some of the largest companies in the US that provide consumer goods, such as Amazon, Walmart and others, are testing ways to use technology to more effectively manage/control their operations in response to consumer demands. For example, Amazon is increasingly relying on a network of contractor drivers in passenger vehicles to distribute packages, a decision

[4] Marr, Bernard. "How Blockchain will Transform the Supply Chain and Logistics Industry." Forbes. Mar 23, 2018.

that generates additional vehicle trips to move the same amount of freight, and has the potential to generate local road congestion. Additionally, shippers are increasingly using instrumentation to track the location and condition (temperature, shocks/shaking, orientation) of freight as it moves through the supply chain. The information generated from instrumented shipping equipment like "smart pallets" could also become a new transportation-related data source.

Additive Manufacturing

Additive manufacturing (also referred to as 3D printing) is increasingly common in specialized applications, or as an alternative to maintaining inventories of specialized product components. The aerospace and medical industries are using the technology to produce custom devices (such as hearing aids and heart values) on demand for just-in-time delivery, significantly reducing inventory costs. And, new applications and types of 3D printing techniques are under development, including 3D printing for the construction of buildings, bridges, highways, airport runways, marine structures, and other facilities that use additive manufacturing. Adoption of 3D printing techniques may result in changes to the volume and value of freight moved in the District. For example, volume of raw materials such as plastic or metal may increase, while the volume of finished goods may decrease. If more raw materials are being moved in lieu of finished manufactured products, the value of freight movements may decrease as well.

A summary of potential impacts due to Technological factors is provided in Figure 1-6.

1.1.3 Environmental Factors and Trends

Environmental factors may influence the demand for or the production of goods and services, either positively or negatively, and may also impact the how and when goods are shipped.

Climate Change

The Earth's average temperature has risen by 1.5°F over the last hundred years, and is projected to rise another 0.5 to 8.6°F over the next century. These small changes in average temperature translate to dramatic changes in weather that include more floods, droughts, and more frequent and severe storms and other weather events.[5]

These changes in the environment are likely to become more noticeable in the coming years and District 1 is likely to be impacted in several ways. First, warmer and shorter winters will result will result in more freeze-thaw cycles each year, with a likely increase in pavement damage. Furthermore, these milder winters are already reducing the available winter harvest season for forestry products, a major freight system user in District 1. Changing climate is also likely to affect the viable tree species that can support forestry in District.

[5] US Environmental Protection Agency

In addition to milder winters, the District is also more likely to experience severe rainfall events, such as the 2012 Duluth Floods, and 2018 Northland floods. Flooding is more likely as a warmer atmosphere holds more moisture and slows prevailing winds, resulting in heavy, slow-moving storms that produce large amounts of precipitation over small areas. The heavy rainfall associated with these events can weaken road and bridge structures, and may disrupt transportation routes.[6] Routing changes will substantially affect the freight system as there are not redundant highways in some part of the region. Ultimately, the District may need to make further investments in bridges, culverts, and other stormwater control methods to improve highway infrastructure's resiliency for severe rainfall events.

Changing Energy Future

Minnesota is currently meeting its goals for transitioning to renewable energy, while lagging on reducing greenhouse gas emissions across industries such as transportation and agriculture. Minnesota's state leadership has expressed a desire to focus efforts on reducing emissions, which will likely impact the freight transportation system through possible changes to motor fuel requirements.[7]

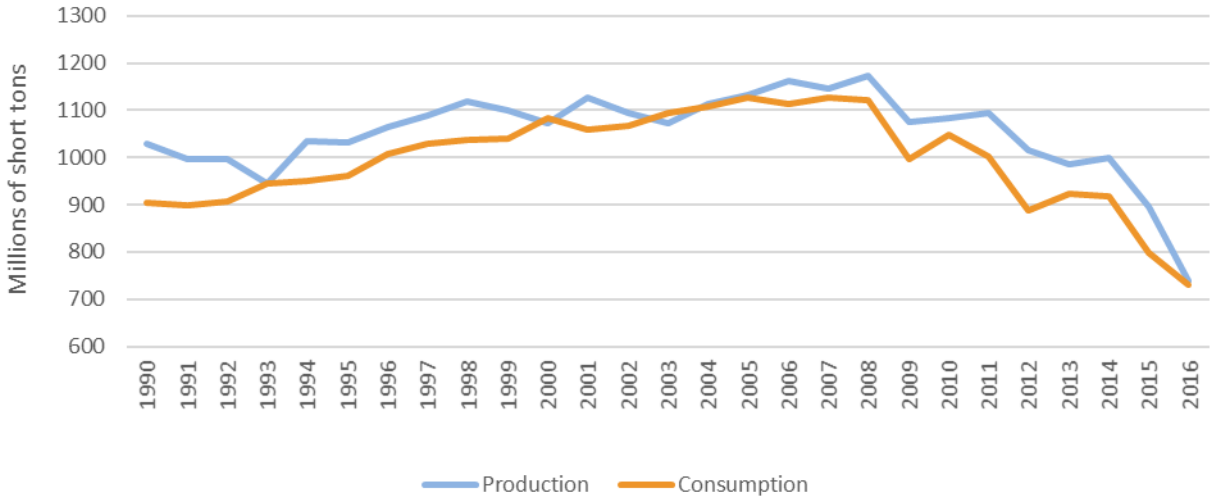
As shown in Figure 1-4, coal production and consumption is declining. This is important as coal-generating plants provide 39 percent of Minnesota's electricity net generation as of 2017. According to the US Energy Information Administration (EIA), US coal production rose by 45 million short tons in 2017, or 4 percent of 2016 production. 2016 set the record for lowest coal production levels since 1978. The slight increase in coal production in 2017 was due to an increase in demand for US coal exports in Asia and Europe after Cyclone Debbie affected the Australian coal supply, along with bankruptcy-caused restructuring of several US major coal producers resulting in lower production costs.[8]

[6] Midwest Economic Policy Institute https://midwestepi.org/2017/10/10/new-study-warns-of-changing-climates-impact-on-midwest-infrastructure/

[7] Dunbar, E "New Environment Commissioners Talk Climate Change, Water Quality", MPR News, Jan 4, 2019 https://www.mprnews.org/story/2019/01/04/new-environment-commissioners-talk-climate-change-water-qualitym

[8] US EIA, "US Coal Production, Exports, and Prices Increased in 2017", February 16, 2018 https://www.eia.gov/todayinenergy/detail.php?id=34992

Figure 1-4: US Coal Production and Consumption (2010-2016)



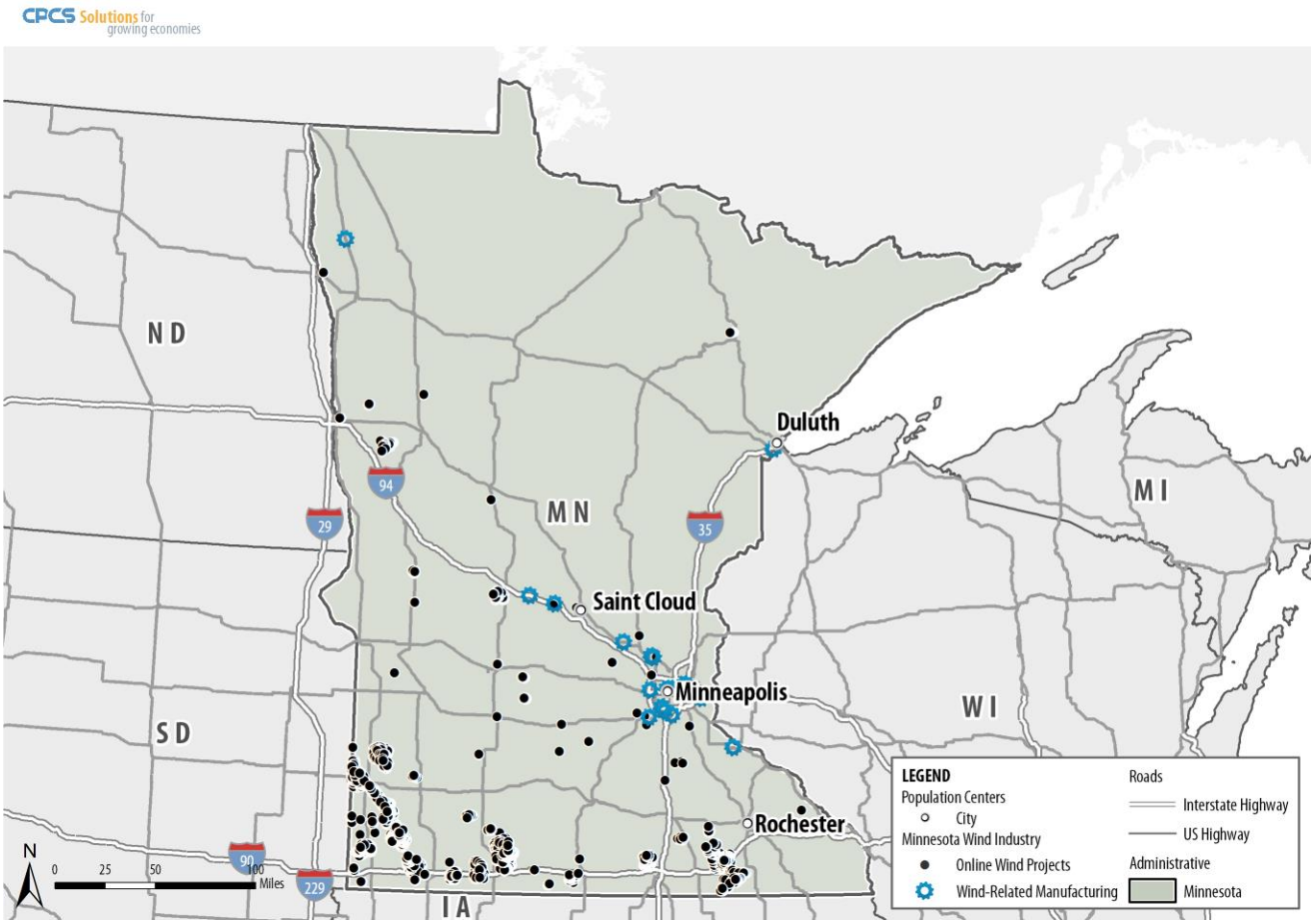
Source: CPCS analysis of Annual Energy Review Data, US Energy Information Administration.

While coal remains the dominant source of fuel for electricity generation, coal consumption is continuing to decline in Minnesota. In 2017, 39 percent of utility-scale electricity generation in Minnesota came from coal-fired power plants, down from 49 percent in 2014. This is due to idling of coal-fired operations of the Taconite Harbor Energy Center along with a number of smaller, older, and less-efficient coal-fired units including two generators in Boswell Energy Center in Cohasset.[9] Currently, almost all of Minnesota's coal supply comes from Wyoming or Montana by rail. The idling of coal-fired generating plants resulted in a significant drop in coal being transported by rail to serve these facilities.

At the same time as coal generation declines, wind generation in Minnesota is continuing to increase. The state of Minnesota currently ranks 8th in the US for electricity net generation from wind energy with state wind farms generating almost 10.9 million megawatt hours of electricity. While most wind farms are located in the southern prairie-regions of the state, District 1's electricity generation is expected to become more wind-based over time. For example, a new wind farm in Nobles County is expected to come online in 2020, and the Duluth-based utility Minnesota Power will be purchasing electricity produced by wind farms in the Buffalo Ridge area. This increase in wind generation capacity is important to the District because the Port of Duluth, MN-48, and MN-70 are key gateways for the movement of wind turbine components into Minnesota and the Dakotas.

[9] Slater, B "Coal-Fired Operations to End at Taconite Harbor Energy Center; Plant will be Idled In 2016", July 9, 2015 https://www.duluthnewstribune.com/news/3782973-coal-fired-operations-end-taconite-harbor-energy-center-plant-will-be-idled-2016

Figure 1-5: Wind Farms and Production Facilities in Minnesota



Source: CPCS Analysis of American Wind Energy Association Data

Finally, transportation activity generates approximately one-quarter of all greenhouse gas emissions (GHG) which are understood by many to be a leading cause of climate change.[10] Lower-emission or carbon-neutral fuels (such as those containing corn-based ethanol, or other biofuels) are promoted by the government, and Minnesota currently ranks fourth in ethanol production in the US. Additionally, auto manufacturers are developing lower emission or zero-emission vehicles, such as the Tesla models X and S, and Chevy Volt. These all-electric and hybrid electric vehicles are generally designed for passenger travel, but battery and electric powertrain technology is being adapted for light-duty delivery vehicles in urban areas. Additionally, trucks and rail locomotives are experimenting with alternative fuels such as liquefied and compressed natural gas (LNG and CNG). As new fuels are introduced, the transportation system will need to adapt to provide opportunities for these vehicles to refuel/recharge.

[10] US Environmental Protection Agency

Environmental Preservation

The abundance of natural resources in District 1 makes the area attractive for forestry and mining industries. These industries face high regulatory scrutiny due to their potential for adverse environmental impacts, and environmental concerns for the state's lakes, rivers, forests, and wildlife. For example, in recent years, the state's water quality has worsened due to pollutants from farm runoff, high salt use on roads, chemicals through consumer products, and sulfate pollutants that are byproducts of taconite mining.[11]

In 2017, the Minnesota Pollution Control Agency proposed a new wild rice sulfate standard to enforce sulfate limits across the state. This proposed new standard is currently in contestation and, if passed, would replace a long-standing 1973 sulfate limit which has been largely unenforced due to its restrictive nature and the cost of enforcement. The taconite iron ore industry would be directly impacted by the outcome of the ruling.

Increasing levels of chloride contamination in lakes, rivers, and groundwater is also a concern of lawmakers. In 2018, problematic levels of chloride in sewage plants was identified by the state in almost 90 Minnesota communities mostly in the south and west. This contamination is largely from salt use on roads and sidewalks, and water softeners for clothes washing. The state also found that salt concentrations are stressing aquatic life in trout streams near Duluth.[12]

Regulatory action on salt use may cause more difficulty maintaining clear pavements along certain routes in District 1, especially in hilly areas. Sulfate limits may impact the taconite iron ore industry, a key commodity for the District 1 freight system.

A summary of potential impacts due to Environmental factors is provided in Figure 1-6.

1.1.4 Economic Factors and Trends

Economic factors may influence overall economic growth (global, regional) or the distribution of that growth and the ability of individuals' or businesses' to invest or purchase goods or services, as well as other considerations.

Several economic factors related to the key industrial sectors in District 1 have already been noted in Working Paper 2, most importantly the importance of three industries: mining, forestry, and manufacturing.

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[11] Dunbar, E "New Environment Commissioners Talk Climate Change, Water Quality", MPR News, Jan 4, 2019 https://www.mprnews.org/story/2019/01/04/new-environment-commissioners-talk-climate-change-water-quality

[12] Tolkkinen, K "What to do about salt: Other communities have spent millions to control chloride pollution", January 6, 2019 https://www.echopress.com/news/government-and-politics/4551794-what-do-about-salt-other-communities-have-spent-millions

Mining

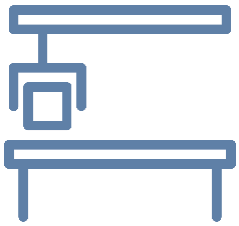
Mining employment represents a significant share of GDP in District 1 (about 17 percent). Additionally, Minnesota is the leading producer of iron ore in the country, and District 1 is the center of this mine production.

GDP information is not available at the county level, but other measures like employment and payroll expenditures can provide an estimate of a particular industry's importance to a region. These indicate that the importance of mining for the District continues to hold steady. However, mining performance is tied to the health of the US and global steel markets, as well as changing production methods. For example, District 1 exported large amounts of taconite to Asia in 2017, but this trade may be jeopardized by continued trade disputes. At the same time, steel producers in the US and globally are increasingly relying on smaller-scale electric arc furnaces, rather than basic oxygen furnaces. Electric arc steelmaking processes utilize larger volumes of scrap metal relative to "fresh" taconite, and continued adoption of electric arc techniques in the US and abroad may reduce demand for taconite.

Forestry

Forestry remains an important industry for District 1, which is home to a large number of paper and other forest product manufacturers. Minnesota's forestry industry is primarily concentrated in District 1 and wood products are one of the key commodities moving on the District's roads. While forestry's contribution to the state GDP is low (between 1.7 and 2.1 percent), the industry has outsized importance in District 1 due to the District's concentration of wood product manufacturers. Since 2000, the industry provides between 2,000 and 3,000 jobs for the state.

Wood products in District 1 appear to be declining in competitiveness, independent of national industry and employment trends over the last 7 years. This is measured by the decline in forestry-related employment at faster rates than the US forestry industry as whole. Furthermore, continued trade disputes between the US and China could result in lower foreign demand for forest products.



Manufacturing

District 1 has a diverse manufacturing sector engaged in traded clusters. This means that many of the District's manufacturers bring trade into the region from other states and other countries. The state's manufacturing share of GDP remains steady between 13.7 and 15.0 percent, higher than that of the nation. In District 1, some manufacturing industries such as machinery, nonmetallic minerals, and plastics and rubber are increasing in competitiveness, while others such as computers and electronic products, chemicals, apparel, and wood products are declining in competitiveness.

Additionally, "near-" and "on-shoring," that is, shifting production from Asia to locations closer to home markets will result in creation of new manufacturing jobs in the US. Though production may in some cases be shifting back from Asia to North American, this is unlikely to mean that jobs lost to Asian manufacturers will return in their same numbers to District 1. Many of the jobs initially lost to Asia are returning in the form of automated manufacturing processes, requiring a fraction of the jobs used to make the same products, and requiring jobs that may call for different skill sets than previous manufacturing work. This on-shoring trend is likely to continue, but the true long term impact to District 1 remains unclear.

While the manufacturing outlook of District 1 is uncertain, the freight system will need to accommodate varied manufacturing needs due to the diverse types of products produced in the region. This is especially critical in Grand Rapids, Virginia, and Duluth, which are important centers for manufacturing employment.

A summary of potential impacts due to Economic factors is provided in Figure 1-6.

1.1.5 Political Factors and Trends

Political factors may influence the production, sourcing, flow or trade of goods, or investments in public infrastructure, such as highways. Some political factors have been briefly noted already, including changing US energy policy and US agricultural policy.

US-Canadian Partnerships

The topic of partnership between the US and Canada is particularly relevant to District 1 because it shares a land border with Ontario, has access to markets in Greater Ontario and Quebec via the Great Lakes and the St. Lawrence Seaway, and has strong links to the steel industry in Ontario and Quebec. Some transportation-related political considerations between the US and Canada include:

- **Border Crossings**. Both the US Customs and Border Patrol and Canada Border Services Agency have reduced hours of operations at smaller border crossings, resulting in potentially longer travel times during off-peak times of day. District 1 has been relatively unaffected by these changes so far, as crossings in District 2 have been the subject of cutbacks.
- **Seaway Maintenance**. The lock system that makes up the St. Lawrence Seaway is jointly maintained by Canada and the US, although the Canadian share makes up the majority of the system. Continued binational support for maintenance and improvement of the Seaway's infrastructure will be necessary to ensure its reliability in the future. However,

finding political support for continued funding could be difficult, given that the Seaway currently carries about ½ of the US cargo volume that it did in the 1960's.[13]

Evolving US and Global Trade Policies

Evolving US trade policies could have important implications for the future of trade between the US and its trading partners, including those closest to the US – Canada and Mexico, as well as the continually rising economic power of China.

The newly-formed US-Mexico-Canada agreement (USMCA) was a key priority of the Trump Administration and is currently pending approval by Congress. Some of the current amendments from NAFTA for the USMCA which are relevant to District, particularly the mining industry, include:

- Higher pay for auto workers, with 30 percent of vehicle production required to be done by workers earning at least $16 an hour beginning in 2020, rising up to 40 percent in 2023. This is an increase of three times the pay of the average Mexican autoworker and may result in lower-wage jobs moving back towards the US. Shifts in production may also affect demand for US steel, and in turn, demand for iron ore.
- Higher requirement of auto parts arising from member nations to qualify for zero tariffs. 75 percent of vehicle components and 70 percent of steel and aluminum must come from member nations. This is an increase from 62.5 percent under NAFTA, and could result in greater demand for iron ore from Minnesota.

The ongoing US-China Trade War is also expected to alter global trading arrangements based on alleged unfair trade practices and theft of intellectual property. At issue is the US' desire for structural changes in Chinese trade practices such as forced technology transfer, intellectual property protection, non-tariff barriers, and cyber theft. The trade war has resulted in some specialized gains but with an overall negative economic impact on both economies in 2018, namely in the automobile, technology, and agricultural industries. Tariffs have also had significant inflationary impacts on manufacturing inputs, particularly in manufacturing and construction.[14]

Rising tariffs have different impacts on District 1's freight. In 2017, 30 percent of Duluth-Superior's loaded ore was bound for foreign markets (primarily China). However, the tariffs imposed by the US have resulted in a boost to the US steelmaking industry. Indeed, ore, slag, and ash exports are up 52 percent from 2017, though the sustainability of these exports are in

[13] "Great Lakes and St. Lawrence Seaway: Assessing Risks and Measuring Performance Could Improve Maritime Transportation." Congressional Research Service. 2018.
[14] Times of Malta, "Trade Wars Cost US, China Billions of Dollars Each in 2018", December 31, 2018 https://www.timesofmalta.com/articles/view/20181231/business/trade-wars-cost-us-china-billions-of-dollars-each-in-2018.698120

question. Other strong 2018 exports in Duluth-Superior include optics and medical equipment, machinery exports, electrical machinery, and plastics. However, there is concern of negative tariff impacts on agricultural exports from the port due to market instability and the rapid shifts in agricultural supply chains.[15]

These and similar announced protectionist plans and policies are likely to have important implications for US-Canada trade and beyond, significantly altering existing cross-border supply chains.

Infrastructure Investment – Soo Locks

A number key investments are influencing global trade patterns, but most pertinent to the Great Lakes-St. Lawrence system is the aging infrastructure of the Soo Locks. The Department of Homeland Security found that a hypothetical shutdown of the Poe Lock – the only lock capable of handling "1,000-footer" freighters to transport raw materials like iron ore – could result in up to a 6-month shutdown, resulting in 10 million people in the US losing their jobs.[16] The smaller MacArthur Lock was shut down for 20 days in 2015, creating delays for over 100 vessels.[17]

Minnesota and the Upper Peninsula of Michigan are the two viable sources of iron ore, and maritime transportation is the most cost-effective method of transporting ore to Great Lakes steel mills. As a result, the supply chain of iron mining, steel production, and steel-based manufacturing is dependent on the Soo Locks.

In 1986, Congress authorized the reconstruction of a twin Poe Lock to create redundancy and reduce system bottlenecks, but the project stopped due to a lack of funding. In 2016, Congress reauthorized the project at its current cost, $922.4 million, but federal appropriations are needed to allow the project to begin. Funding for both upgrading of the locks and routine maintenance is needed to ensure that the US steel-based manufacturing sector is not impeded.

A summary of potential impacts due to Political factors is provided in Figure 1-6.

1.1.6 Questions for an Unknown Future

As shown above, District 1 is facing pressures that are both internal and external to the region. Public and private stakeholders and partners in this freight plan are positioned to address some

[15] Finance & Commerce, "Amid Trade War, Duluth Port Steams Ahead", September 10, 2018 https://finance-commerce.com/2018/09/amid-trade-war-duluth-port-steams-ahead/

[16] Office of Cyber and Infrastructure Analysis, US Homeland Security, "Unanticipated Closure of the Poe Lock", June 2015 https://www.echopress.com/news/government-and-politics/4551794-what-do-about-salt-other-communities-have-spent-millions

[17] Switalski, A, Infrastructure Law and Policy "Soo Locks Upgrades: Process and Timeline", March 9, 2016 https://www.infrastructurelawandpolicy.com/soo-locks-upgrades-process-and-timeline_030916

of these pressures, but many are outside of District stakeholders' control. Regardless, as history has shown, District 1 should prepare itself for changes or disruptions that will inevitably influence the freight system in the future. While the future is unknown, planning and investment decisions will still need to be made.

A set of questions have been developed to aid consideration of how the freight system and its use may be different in the future. These questions are general and not comprehensive, but frame some of the reflections in the preceding section that should inform this Plan – Its vision, goals and, ultimately, recommendations.

What will be the demand for freight in District 1?

- Will freight-related industries continue to represent nearly ½ of the District's employment?
- Will consumers be able to manufacture their own goods (3D printing) to fulfill their own needs?

How will freight move in the District 1?

- Will automated trucks mark the end of the ever-present truck driver shortage?
- Will major local developments (investments) change how the freight system is used in the District?

How will District 1 trade?

- How (what mode) and with whom will the District trade?
- What will the District's most important transportation gateways, corridors, and hubs look like?

How will transportation infrastructure and services in District 1 interact with the natural and built up landscape?

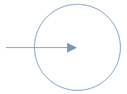
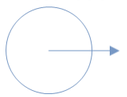
- Will climate change necessitate the relocation or "hardening" of transportation assets and built up areas?
- How will freight and the community interact?

How will freight transportation and mobility in District 1 be governed?

- How will we pay for transportation infrastructure and services?
- How will regional cooperation work across institutions, agencies and stakeholders?

The key is not so much in searching for answers to these questions as much as to consider how to make the District's freight transportation system resilient and adaptable to an unknown future.

Figure 1-6: Potential Impacts of STEEP Factors

Potential Impacts	Social Factors	Technological Factors	Environmental Factors	Economic Factors	Political Factors
Source 	Social factors are not expected to have an impact on sourcing patterns.	Additive manufacturing (3D printing) may require different materials than current manufacturing processes, resulting in a shift in sourcing patterns.	• The cost of transportation may change with changing motor fuel requirements, which may impact sourcing of goods traveling along the District 1 freight system • Utility companies will also continue to diversify away from coal and onto new sources likely with different origins and transportation modes • For example, natural gas travels by pipeline, while coal travels by rail or barge • Wind farms are concentrated in south Minnesota	As manufacturing shifts, so too will the inputs to District 1's manufacturing and the origination of products destined to consumers in District 1	Sourcing patterns for District 1's manufacturers may change depending on tariffs or agreements relevant to raw materials.
Destination 	• The aging population and increasing income in the District may be linked to changes in consumer purchasing patterns. • Goods may be purchased at brick-and-mortar stores, but more and more goods will be ordered online and delivered directly to residential doorsteps.	The adoption of 3D printing technologies may result in altered or reduced demand for manufactured products.	• Fueling/charging infrastructure will need to evolve if motor fuel requirements change • Existing brick and mortar gas stations may be obsolete in the future	• Raw materials may become less competitive in the international marketplace and may not be directly exported • Raw products may instead be shipped to interim US facilities for refinement or processing prior to exporting to "add value" and ensure US products remain competitive	To the extent goods are produced in District 1 (manufactured, mined, or grown) and exported, destinations may be reduced or higher costs may be incurred to get to market.
Route 	• Most "last-mile" deliveries to brick-and-mortar stores, or "final 50-feet" deliveries to residential doorsteps, will be made via truck • Many consumer goods will be shipped internationally via container and unloaded at distribution centers near intermodal hubs such as those in the Twin Cities or Duluth. If more consumer goods containers are dropped in Duluth (instead of the Twin Cities) in the future, trucks will still be used for "last-mile" delivery but a shorter route may be taken to their final destination	• Smart technology will continue to ensure that trucks (delivery and through vehicles) take the least congested and most direct routing in the District • More last-mile deliverables may be made by personal vehicles	• Routing is changing as barges increasingly decline to deliver coal to power plants • As sea level rises, routing may also be impacted • Population center and key freight infrastructure (water ports, roads, and rail) directly above the water could be vulnerable in the future • Alternate routes/options should be considered in advance of these changes	Decreased or altered demand for forestry products, or altered patterns of manufacturing could result in change of commodity flows or routes.	Routing changes in District 1 due to policy changes are uncertain.
Volume 	While household income has seen a slight increase in the last decade, this factor is not expected to affect flow volume substantially in a time of flat population growth.	• Additive manufacturing may reduce the need for shipment of finished manufactured goods, but may result in an increase in the movement of "raw" materials. • Contractor-based shipping models for e-commerce may result in additional freight trips, with freight carried in personal vehicles.	• Volume of goods transported may change over time with new motor fuel requirements • With the increase in wind farm development in Minnesota, the volume of over-dimensional flows may increase in the future • The forestry industry will also be impacted by climate change in terms of how much and what type of products are transported	Adoption of electric arc furnaces, and trade disputes could reduce the volume of iron ore and forest products produced and shipped from District 1.	The volume of goods transported may increase as the US may produce more goods for US consumption.
Value 	The value of the goods moved on District 1's freight system is expected to see a modest increase, barring significant disruptions to the mining industry. This increase in value is a function of increasing consumer wealth, but also due to the fact that more and more consumer goods are higher value by nature (e.g., electronics and high-tech related).	Additive manufacturing technology may reduce the value-per-ton of shipments, as movement of finished manufactured goods is replaced with movement of raw material inputs for additive manufacturing.	• The value of goods traveling along the system may increase in the future with changing transportation costs due to new energy sources • The decline of coal as a key commodity by rail and barge is expected to increase the per-ton value of goods, but could result in decreased volume	Value of goods transported may increase over time, as District 1 (and the US, generally) works to add value to US products so they may more effectively compete internationally.	The value of goods transported may increase as the US may produce more goods for US consumption.

2 Freight System Needs and Issues

Key Findings

District 1's freight system has a variety of needs and issues, most of which are focused on the road network. In particular, both stakeholder and data analysis reveal many issues related to roadway safety, including truck operations due to their slower-moving relative to passenger traffic. As a result, safety-related improvement such as passing lanes and harder or wider shoulders were often mentioned as solutions by stakeholders consulted.

By comparison, there were relatively fewer needs and issues related to the topics of mobility or condition. Congestion is not a problem in the District, and relatively common mobility concerns related to weight limits and bridge clearances for large trucks. In terms of system condition, pavements do have issues but analysis found that all will be addressed as part of future capital plans. District 1 does have a large number of structurally-deficient bridges, but these are concentrated on local roads, and do not appear to be an impediment to freight movement.

A top need for Minnesota is reliable and flexible funding that can be used toward freight projects. While the 2018-2037 MnSHIP marks the first time MnDOT has identified dedicated freight funding for projects, it is only due in part to Federal legislation that funds projects through 2022, and may not be renewed. MnDOT has developed maritime and rail grant and loan programs to address freight system needs where traditional highway system funds could not, but these funds continue to be inadequate compared to the need. In several cases these programs are dependent on action by the Legislature to provide funding.

2.1 Introduction

District 1's freight needs and issues are complex, and many needs and issues have shared causes or solutions. This complexity and "overlap" can make categorization of needs and issues difficult. For example, the need for additional passing lanes on the District's two-lane freight corridors is related to both the issues of mobility and safety: slower-moving trucks can reduce the free-flowing speed of traffic, and passenger vehicle drivers may attempt to pass on two-lane roads, increasing the potential for collisions.

For simplicity, the needs and issues discussed in this Chapter are described on a mode-by-mode basis. Within each mode, needs and issues are placed in three categories that correspond to the performance analysis completed in Working Paper 2. These categories were adapted from the Minnesota State Freight Investment Plan criteria:

1. **Safety**, which is primarily related to crash rates for roads as well as railroad grade crossings, and MnDOT's previous safety risk factor analyses.

2. **Mobility**, which is related to the performance of the system and the speed and ease with which freight can move in the region. This includes topics like congestion, weight limits and bridge clearances.

3. **Condition**, which relates to the level of adequate maintenance of roads and bridges.

The information for this summary of needs and issues came from five main sources:

Advisory Committee and Technical Team Meetings: The Advisory Committee is made up of public and private system stakeholders, and was created to provide "big picture" guidance in development of the District 1 Freight Plan. The Technical Team is smaller, made up of agency staff, and provides guidance on how the plan will be used to inform investment decisions. Meetings with both groups were conducted in September and November 2018, with two more meetings planned for 2019.

Stakeholder Consultations: The project team conducted 27 phone and in-person consultations with private and public freight stakeholders between June and December 2018. The results of these consultations were synthesized with other findings on needs and issues.

Open Houses: The project team collected feedback from public and private stakeholders at an open house at MnDOT's District 1 headquarters in Duluth on January 16.

Analysis of Data: Evaluations of safety, mobility, and condition were completed using data provided by MnDOT. Working Paper 2 provides further detail on the analytical approach and findings relevant to each data source.

Previous Studies and Plans: The project team completed an in-depth review and synthesis of needs and issues identified in previous plans and studies. A particularly important study was the 2017 *Manufacturers' Perspectives Study*, for which MnDOT staff conducted their own in-depth stakeholder consultations.

It is important to note that this chapter is a summary of major needs and issues, and is not a comprehensive inventory of each identified need or issue for District 1's system. Instead, **Appendix A** – Stakeholder Identified Needs and Issues, and **Appendix B** – Data Identified Needs and Issues provide tables listing the geographic location and description of each need or issue that was related to a specific asset of District 1's freight system.

2.2 Roadway Needs and Issues

Road and trucking-related needs and issues make up the majority of District 1's freight transportation needs and issues. This road-related majority share of needs and issues reflects

the fact that trucking is the most commonly used mode for freight transportation, carrying about 63 percent of Minnesota's freight tonnage. Additionally, MnDOT and its local partners have the most control over road investments and the largest amount of their funding is available for road investments. By comparison, these agencies have relatively limited control over, or funds for rail, port, or aviation improvements.

Road- and trucking-related needs and issues make up the majority of District 1's freight needs and issues.

Road and trucking-related needs and issues are organized by the general categories of safety, mobility, and condition. These categories reflect some of the investment categories from the Minnesota State Highway Investment Program (MnSHIP), as well as additional categories created by the project team to reflect other funding streams.

Safety

Passenger and Freight Conflicts

Passenger and freight conflicts were mentioned as general concerns in the Manufacturers' Perspective study, during consultations with stakeholders, and in Advisory Committee meetings. Relatively few locations had specific passenger and freight conflicts noted, instead some general District-wide concerns emerged.

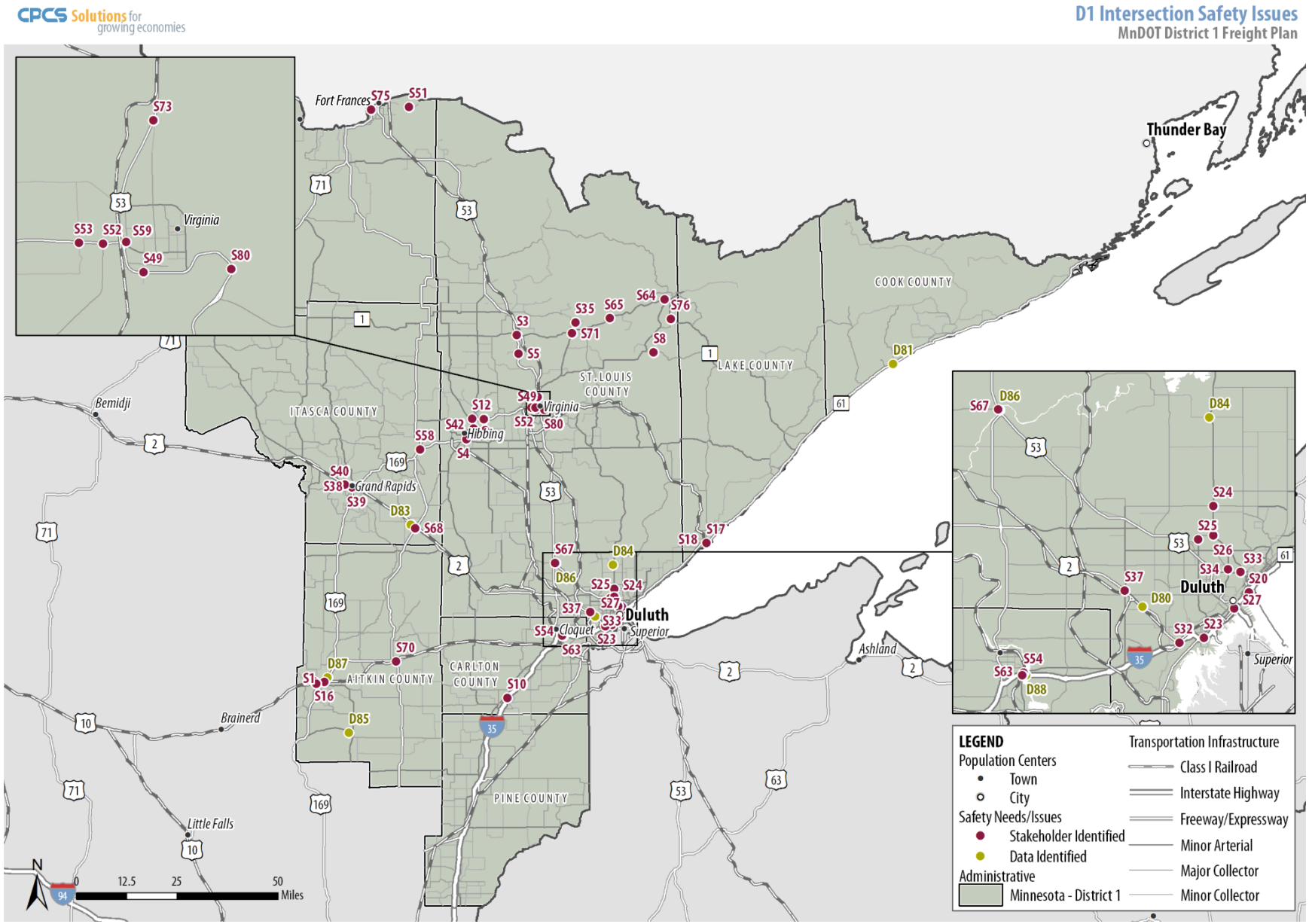
There are two main conflicts between passenger and freight traffic, and both relate to the fact that these two kinds of traffic must share the same routes in the District. First, trucks are generally slower than passenger vehicles, and may be particularly slow on hills and when accelerating from stops. As a result, there were concerns with safety related to passenger vehicles passing trucks on two-lane roads, particularly in hilly areas.

Second, there were concerns about potential conflicts between tourist traffic and truck traffic. These concerns included comments about road safety with tourists pulling over on shoulders to take pictures on Highway 61, general tourist congestion on I-35 and MN-61 on weekends, and congestion generated by tourist traffic at major attractions and events, such as Grandma's Marathon, Bentleyville in Duluth, and some casinos, such as Fortune Bay Casino near Tower.

Intersections

Intersection-related needs and issues were identified from stakeholder comments and data analysis, and these needs and issues fall into both the safety and mobility categories. However, a greater share of needs and issues with intersections were related to their safety than their effect on truck mobility. For example, about one-third of businesses interviewed in the Manufacturers' Perspectives Study mentioned concerns with intersection safety. Identified intersection problems are shown in Figure 2-1. Issues identified with an "S" were identified by stakeholders and issues identified with a "D" were identified by data analysis. Each issue is further described in **Appendix A** (Stakeholder) and **Appendix B** (Data).

Figure 2-1: Intersection Safety Needs and Issues



Source: CPCS analysis of MnDOT Safety Data; Manufacturers' Perspectives Study, Stakeholder Consultations, Advisory Committee and Technical Team Feedback. 2019

Many of the intersection safety needs and issues for trucks were related to their relatively slower speed and acceleration compared to passenger traffic, and their need for adequate space to safely turn and accelerate. Stakeholder feedback on safety issues covered the entire District, and focused on intersections in or near urban or suburban areas, including Duluth, Virginia, Hibbing. Ultimately, stakeholders noted relatively few safety issues in rural areas, with the exception of northern St. Louis County.

Many intersection needs and issues relate to trucks' slow speed relative fast-moving traffic when turning or entering traffic, and trucks' need for greater space to accelerate, decelerate, and turn.

These needs and issues mentioned by stakeholders included some key themes:

- **Highway 169** was mentioned in one-quarter of the Manufacturers' Study comments about intersection safety, due to tight turns and sight obstructions, as well as congestion in some of the Range Cities.
- Complications with turning and accelerating at intersections were a major source of stakeholders' safety concerns, as slow-moving trucks turning off of and on to trunk highways could create traffic hazards, particularly in areas with a high overall speed limit. **Concerns about space for turning, acceleration, and for traffic to pass stopped trucks were common** among stakeholders, and a need for turning or bypass lanes was mentioned frequently on trunk highways outside of the Duluth area such as US-169, US-2, US-53, and MN-61. Specific locations for additional turning or bypass lanes included: US-169 and MN-47 near Aitkin, MN-61 in Two Harbors, US-169 and County 5 between Chisholm and Buhl, and US-53 and P&H Road, which provides access to ArcelorMittal's Minorca mine as well as a large mining equipment supplier.
- **Inadequate stopping sight distances for trucks** means safely stopping at intersections can be a concern. During the Manufacturers' Perspectives study, about 25 percent of businesses mentioned a need for advance warning for intersections or traffic signals, such as warning lights. Particularly important areas for these improvements were US-53 in Virginia, US-169 and County 92 in Hibbing, and US-2 in Adolph. These improvements could also improve mobility, as advance notification of upcoming traffic light changes prior to an intersection could help truck drivers know if they should prepare to stop, or are OK to proceed through an upcoming intersection.
- Visibility of oncoming traffic, or **impaired sight lines at skewed intersections** was a common safety-related intersection concern, particularly in relation to hills, turns, or trees, however relatively little information on specific locations was provided.
- Driver behavior at intersections, such as **failure to stop** was also a concern, but stakeholders did not provide much information on specific locations where drivers were running stop signs or red lights.

- Some **railroad grade crossing** issues were noted, and are discussed in Section 2.3.

In addition to the stakeholder feedback noted above, data analysis provides some insight into potential intersection issues. Using MnDOT's safety data, nine intersections were identified from MnDOT's highway safety data as locations with more than two heavy truck-involved accidents between 2016 and 2017. These sites were distributed across District 1, but 2/3^{rds} were located at intersections on trunk highways, including US-2 in Hermantown and US-2 in Itasca County, MN-61 in Cook County, and MN 18 and MN-210 in Aitkin County. By comparison, intersections with the highest levels of assessed risk are more spread out across the District, on a variety of trunk highways, county highways, and local roads.

Stakeholders provided a greater level of insight on intersection safety needs and issues in developed areas.

Stakeholders identified many more intersection safety needs and issues than were identified from an analysis of previous truck-involved crashes, and generally, there was little overlap between data-identified needs and issues, and stakeholder-identified needs and issues. Notable overlaps between stakeholder- and analysis-identified needs and issues were:

- The I-35 / MN-45 interchange near Cloquet.
- The intersection of Swan Lake Road and US-53 in Independence.
- Intersections on US-2 near the UPM Blandin plant in Grand Rapids, where a stakeholder noted a need for an additional traffic signal.

In general, stakeholders' comments about safety tended to be clustered in more developed areas, including Duluth, Virginia, Chisholm, Hibbing, Two Harbors, and Aitkin. However, previous crashes and the District 1 risk assessment identified needs and issues were focused on rural areas. This difference is likely due to the fact that stakeholder concerns about safety included both "minor" and "major" safety concerns, while the crash data focused on more severe crashes and risk analysis was not conducted for truck-specific factors, but reflects risk for all road users as a whole. Ultimately, this gap suggests that until truck-specific safety/risk factors are developed and implemented, stakeholder feedback may be a useful means of informing truck-specific safety investments, providing a complement to MnDOT's approach to assessing risk for all road users.

Corridors

As with intersections, some safety concerns for corridors are related to trucks' slower performance relative to passenger traffic. The two major safety-related needs and issues for corridors were (1) a need for wider and/or paved "hard" shoulders, and (2) a need for additional passing lanes. Figure 2-2 shows safety-related corridor needs and issues identified by stakeholders and data analysis. Data-identified segments were located using a crash density analysis function, which identified segments where truck-involved crashes were particularly high. Issues identified with an "S" were identified by stakeholders and issues identified with a

"D" were identified by data analysis. Each issue is further described in **Appendix A** (Stakeholder) and **Appendix B** (Data).

Harder and wider shoulders are desirable because they give truckers extra room to control their vehicles and avoid potential hazards. Stakeholders generally noted a need for wider or harder shoulders on less-traveled state trunk highways and county highways, including MN-73, MN-38, MN-65, MN-37, and St. Louis CSAH 5. However, details provided by stakeholders were often vague: stakeholders often noted that all or most of a route needed passing lanes or improved shoulders. Because of this relatively vague feedback, stakeholder-recommended areas for shoulder improvements cover more routes than areas that MnDOT data identified as having potential safety problems.

In addition to harder or wider shoulders, many stakeholders noted that the District needed more passing and climbing lanes, to allow traffic to safely pass slow-moving trucks without danger of collision with oncoming traffic. Specific areas where passing or bypass lanes were recommended included MN-37 from Hibbing to US-35, and US-169 around Aitkin. More generally, stakeholders contacted during the Manufacturers' Perspectives study recommended that rural highways have passing lanes every five to ten miles.

Many stakeholders would like wider or paved shoulders, as well as passing lanes, but less have specific requests for the placement of this infrastructure.

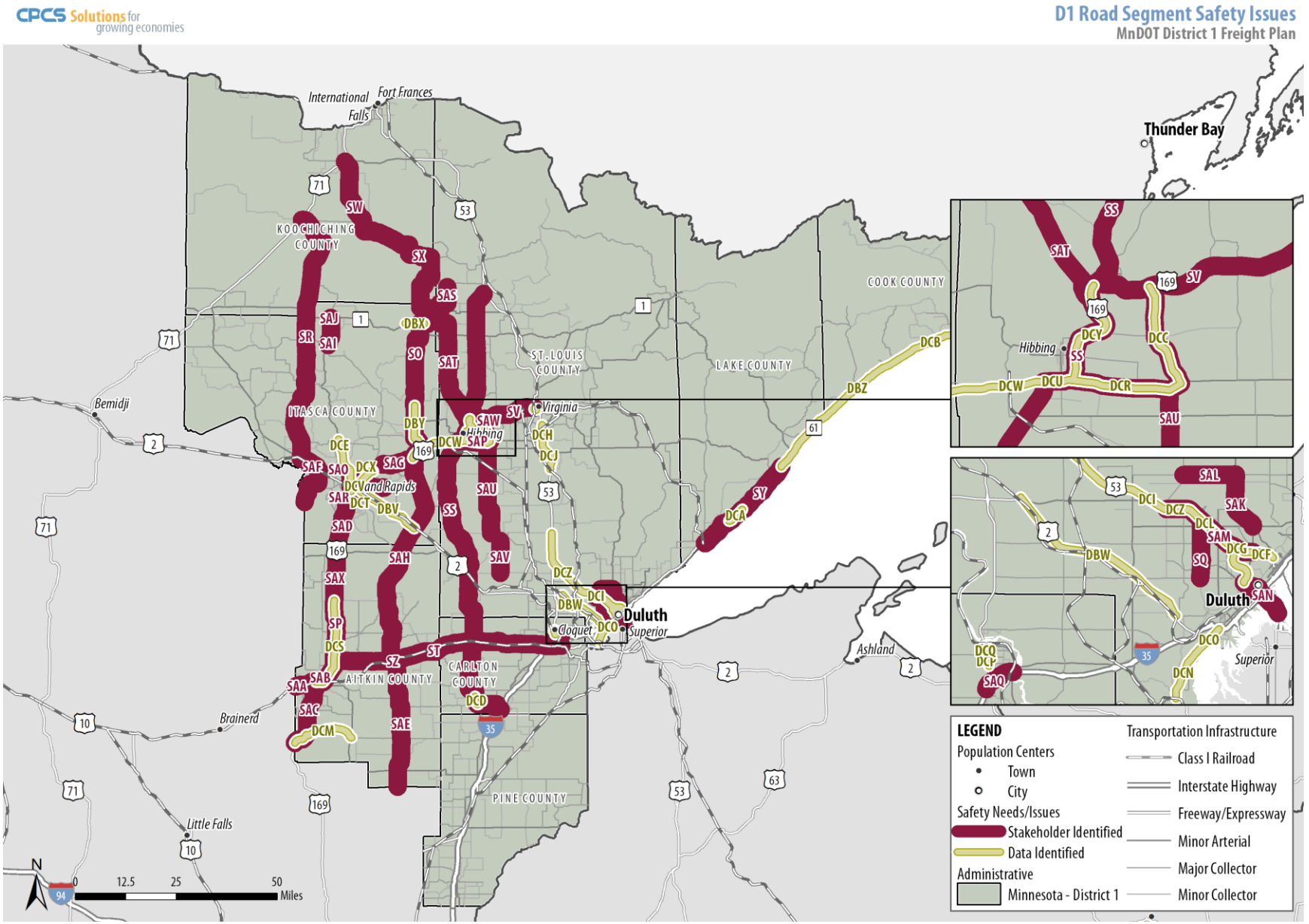
Overlap between stakeholder and data-identified corridor safety needs is relatively limited and includes:

- US-169 from Aitkin to Hill City
- MN-65 north of Nashwauk
- US-53 around the Miller Hill area of Duluth
- US-169 and local routes near Hibbing

As before, this small overlap between stakeholder-identified and data-identified issues is likely due to the fact that industry stakeholders provided more generalized feedback on long stretches of roadway.

Ultimately, the general nature of stakeholder feedback on corridor-related safety issues suggests that MnDOT should consider the creation of additional passing lanes or wider shoulders while re-building existing roads, but standalone projects to add this infrastructure may not be warranted.

Figure 2-2: Corridor Safety Needs and Issues



Source: CPCS analysis of MnDOT Safety Data; Manufacturers' Perspectives Study, Stakeholder Consultations, Advisory Committee and Technical Team Feedback. 2019

Weigh Station and Commercial Vehicle Enforcement

During the Manufacturers' Perspectives Studies, some stakeholders noted that a lack of consistent commercial vehicle enforcement practices was a problem, as some regulations were interpreted differently by different officers. As a result, it was difficult for truck operators to fully understand what actions they needed to take to be in compliance with Minnesota's truck laws.

MnDOT administers a Weigh Station and Commercial Vehicle Safety/Enforcement Program and allocates $2 million per year towards maintaining/improving commercial vehicle enforcement and safety. As part of its program two key District 1 needs have been identified. First, bridge crossings between Minnesota and Wisconsin in Duluth-Superior were identified as key points needing additional enforcement investment, but the issue faces challenges in terms of available funding and land for this activity. A second District 1 issue is the pull-off weigh enforcement site along I-35 in Saginaw which also has long-term improvement needs.

Grade Crossings

A discussion of grade crossing safety-related issues is provided in Section 2.3 – Railroad Needs and Issues.

Mobility

Mobility considerations include topics that affect the ease or efficiency with which trucks can move through District 1. These topics include things like traffic congestion, truck routing, bridge clearances, and weight limits. Many of the mobility considerations also have a strong relevance to safety.

Intersections

Intersection issues directly related to safety are noted in the preceding section on safety.

An intersection concern related to mobility, is the challenge roundabouts create for truck operations. While District 1 has very few roundabouts, stakeholders consulted for the Manufacturers' Study, the DSMIC Truck Route study, and this Freight Plan asked that future roundabouts be designed to accommodate a wider range of trailers beyond 53' dry vans and flatbeds, including over-length trailers and low-boy trailers.

Another intersection mobility improvement noted by some stakeholders was a desire for additional traffic lights, or re-timed traffic lights. US-2 in Grand Rapids, MN-61 in Two Harbors, and MN-65 and US-210 near Nashwauk were all areas where additional traffic lights or signal timing adjustments were recommended.

Corridors

Corridor issues directly related to safety are noted in the preceding section on safety.

One measure of corridor mobility, traffic congestion, is not an issue in District 1. Very few stakeholders mentioned congestion as a problem, and only seven relatively short road segments were identified as having a relatively high level of congestion. The only congested areas identified by stakeholders were downtown Two Harbors, and the Twin Ports Interchange, while

data analysis also identified some minor congestion in downtown areas of the Range Cities, primarily Virginia.

Traffic congestion is not a mobility concern for District 1.

Regional Connectivity

Freight does not stop at District 1's boundaries, and connections to other regions or global markets are critical for many of the District's businesses. Needs and issues both inside and outside of the District can affect its connections to other areas, and the well-being of businesses that rely on the freight system. The District's connectivity needs and issues are:

- **Lack of redundancy.** During Advisory Committee meetings, a commonly-mentioned issue for District 1 is its lack of redundant roads for critical corridors. For example, Highway 61 is the only route connecting much of the North Shore, and the only route to Thunder Bay. Similarly, US-2 and US-53 provide critical connections to Range Cities, but lack parallel routes that could easily accommodate detoured traffic while providing similar travel times or distances. This lack of redundancy extends to other highways as well, such as US-2, and US-53 in Wisconsin, which provide District 1 with connections to the Upper Peninsula and Chicago, respectively. This lack of redundancy is a concern because road closures (due to events such as accidents or severe weather) mean that trucks must make long detours. For example a brief shutdown of MN-61 at Taconite Harbor in 2017 resulted in a 27+ mile detour, mostly on dirt or gravel roads. In the future, this lack of redundancy for key routes could be a threat for the District's businesses, who would have to absorb the cost of longer travel times if a major corridor is impassible for long amounts of time.
- **Weight Restriction Differences**. A commonly-noted issue in District 1, and the Midwest as a whole, is asymmetry in weight restrictions between different states. This difference in weight limits means that trucks traveling over state or provincial borders must be sub-optimally loaded. For example, one stakeholder noted that Minnesota's relatively lower weight limits compared to Wisconsin and Ontario meant that trucks sent to Minnesota must be under-loaded, or loads must be broken down and re-organized in Superior.
- **First- and Last-Mile Connections.** First- and last-mile connections provide access between trunk highways and freight facilities. These can include local roads such as city streets or county highways. These local roads may lack the design necessary to support the safe or efficient movement of trucks. For example, one stakeholder noted that an intersection in downtown Aitkin is too narrow for turning trucks. As a result, trucks must take circuitous routes to access freight facilities, pass through residential areas, be delayed by local congestion, or carry less than their maximum weight. First- and last-mile connection problems are often related to local weight restrictions, described further below.

Route Restrictions

- **Low Vertical Clearances**. Low vertical clearances, particularly under bridges, were identified as a mobility impediment in both stakeholder feedback as well as an analysis of MnDOT's bridge data. Stakeholder feedback included identified issues with bridge clearance on Superior Street and Piedmont Avenue in Duluth, US-2 in Saginaw, US-165

west of Buhl, and Highway 2 in La Prairie. Figure 2-3 shows which low vertical clearance issues identified by a review of MnDOT bridge data, and stakeholder feedback. Issues identified with an "S" were identified by stakeholders and issues identified with a "D" were identified by data analysis. Each issue is further described in **Appendix A** (Stakeholder) and **Appendix B** (Data).

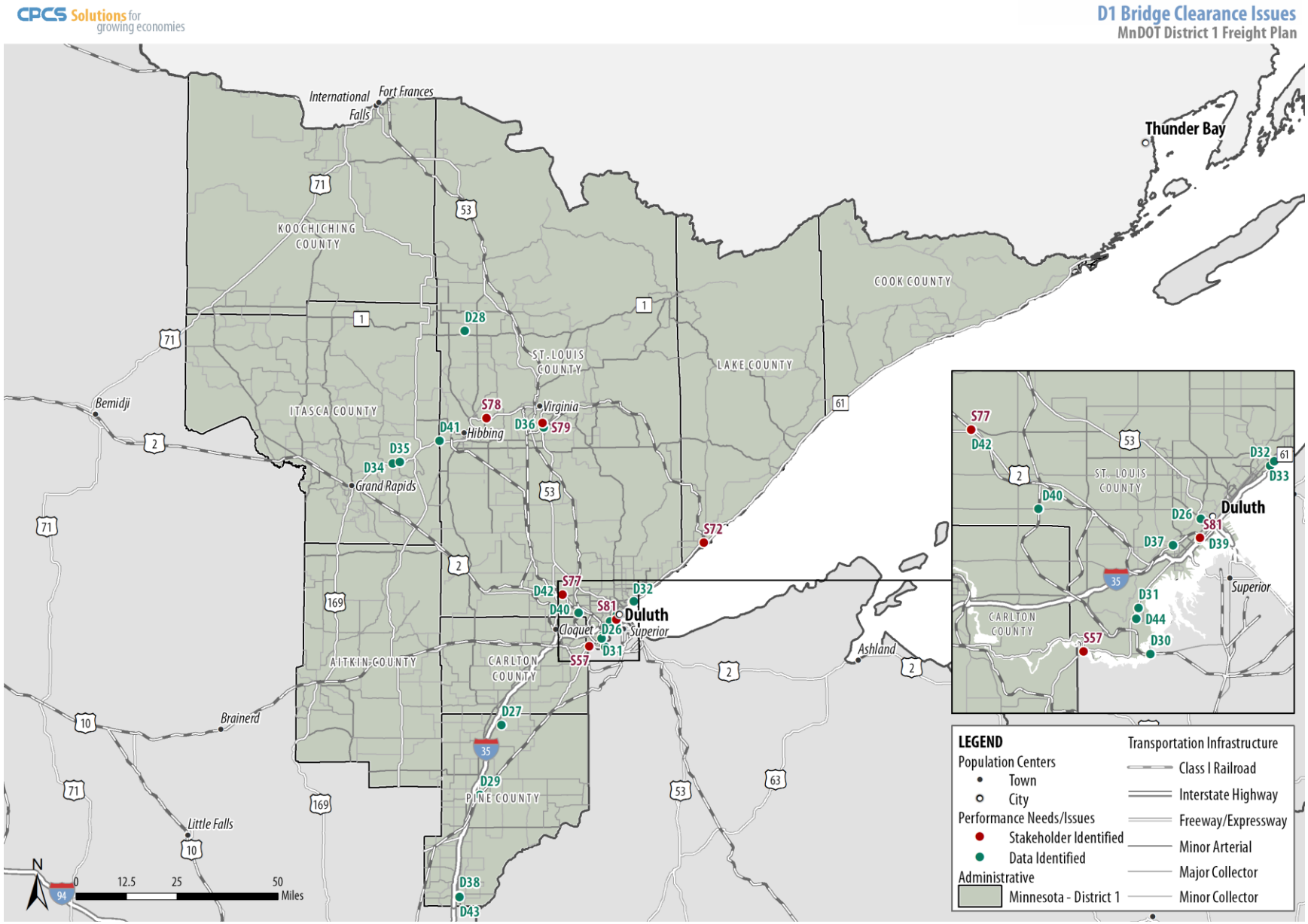
By comparison, analysis of MnDOT's bridge data identified 19 bridges that were lower than FHWA-recommended standards. There was significant overlap between data and stakeholder feedback about low-clearance bridges, such as the bridges listed above.

- **Spring Restrictions**. About one-quarter of Manufacturers' study consulted businesses noted that spring load restrictions affect their operations, and these restrictions were particularly relevant for forestry-related businesses, who carry much of their raw lumber at the end of the winter. Ultimately, these restrictions make freight movement less efficient, as trucks cannot carry as much weight when restrictions are in effect. Stakeholders did not note specific locations where spring load restrictions impacted their businesses.
- **10-Ton Routes.** Roads that lacked construction to 10-ton standards were noted as another impediment to freight mobility, although specific mention of a need for 10-ton roads was limited to a few stakeholders in the Manufacturers' study. Analysis of the 10-ton network mapped in Figure 2-4 shows that overall, District 1 has relatively few gaps in 10-ton route designations, with the exception of more minor county highways. This suggests that from a weight perspective, truck mobility is high on major corridors, but there may be first- and last-mile weight-related mobility impediments on local roads.
- **Restricted routes and movements for OSOW**. Together, the restrictions listed above can create barriers to the efficient and safe movement of Oversize-Overweight or even "regular" freight in District 1. For example, two-thirds of the Manufacturers' study participants noted that weight limits adversely affected their truck operations.

Other Mobility Needs and Issues

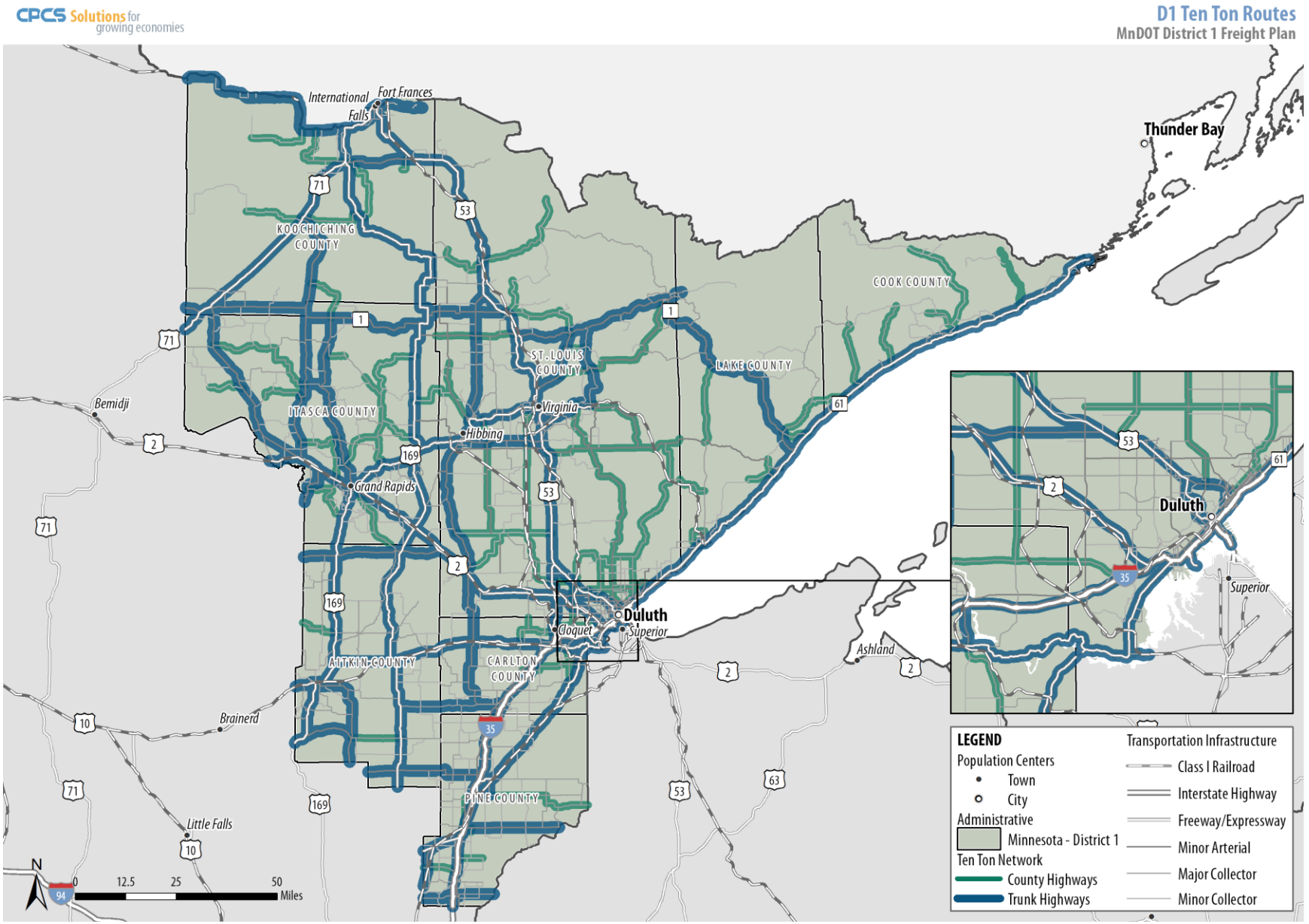
- **Snow and Ice Removal.** District 1 has some of the highest snowfall of any portion of Minnesota, and snow and ice have the potential to seriously disrupt trucking operations. During the Manufacturers' study, stakeholders provided input on areas to improve snow and ice removal. Stakeholders also expressed concern about the use of chemical and brine deicing solutions, which were rapidly corroding trucks and trailers, resulting in higher equipment maintenance costs.
- **Construction and Closure Announcements.** During previous outreach for the Manufacturers' Perspectives study, some stakeholders indicated that they would like better communication from MnDOT about road closures and construction, so that they could adequately plan their truck operations. Suggested solutions included better use of social media, and improved signage listing dates and times of potential construction.

Figure 2-3: Bridge Clearance Needs and Issues



Source: CPCS analysis of MnDOT Bridge Data, Stakeholder Feedback, Manufacturers' Perspectives Study. 2019

Figure 2-4: District 1 10-Ton Routes



Source: CPCS analysis of MnDOT data. 2018

Infrastructure Condition

Infrastructure condition is important for two reasons. First, poorly-maintained infrastructure can damage vehicles and cargo, or force trucks to travel at slower speeds, effectively increasing travel costs for District businesses. Second, structurally-deficient infrastructure may necessitate lower weight limits, which could result in longer routes for trucks. This discussion of infrastructure condition is broken down into two parts: pavement condition and bridge condition.

Pavement Condition

Stakeholders have indicated that smooth pavement is important for safe shipment of their goods, as rough pavement can result in damaged cargo. Figure 2-5 shows the areas of rough pavement identified by stakeholder feedback and trunk highway Ride Quality Indexes (RQI) from MnDOT pavement condition data. RQI is a measure of pavement roughness, and ranked on a scale of 0 to 5, 0 being "very poor", and 4.1-5.0 being "very good."

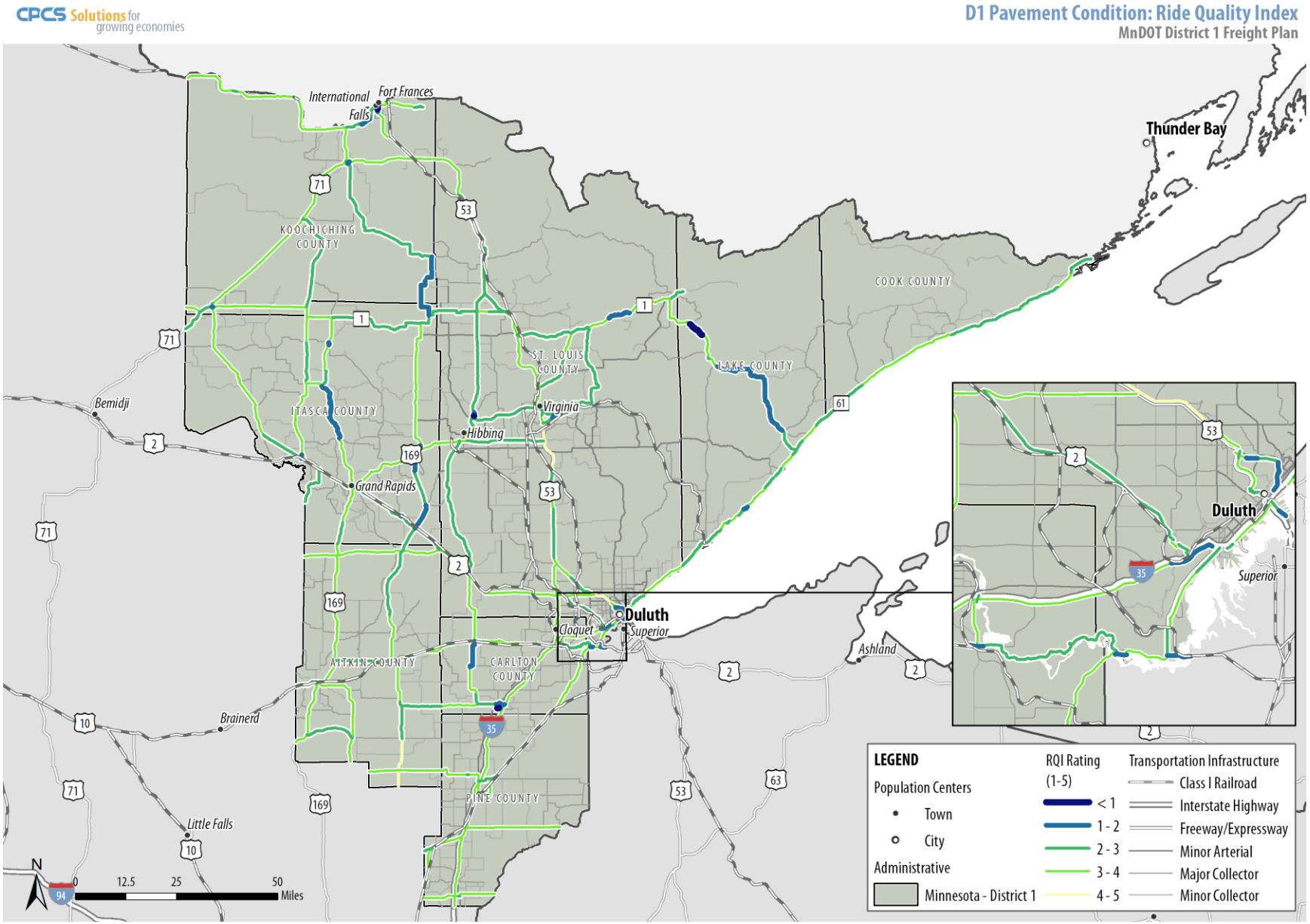
Figure 2-6 shows areas where MnDOT identified RQI less than 2.0, as well as segments of road that stakeholders identified as being in poor condition. Small portions of the District have ride quality that is considered "poor" or worse, but stakeholders identified a relatively large number of road segments as being particularly rough. Overlap between stakeholder-identified needs and issues was limited, and included US-53 near International Falls and MN-1 near Soudan. Additionally, stakeholders identified rough areas that were not covered by MnDOT's pavement assessments, including:

- MN-61 on the North Shore
- MN-1 in northern Itasca County
- US-53 in northern St. Louis County
- US-53 between Duluth and Virginia

By comparison, MnDOT's RQI ratings identified a separate set of issues, including many shorter segments of rural roads. The difference between MnDOT- and stakeholder-identified needs and is likely due to the fact that stakeholders have the most experience operating on major freight corridors, while MnDOT's pavement assessment considers less-traveled trunk highways as well as major corridors.

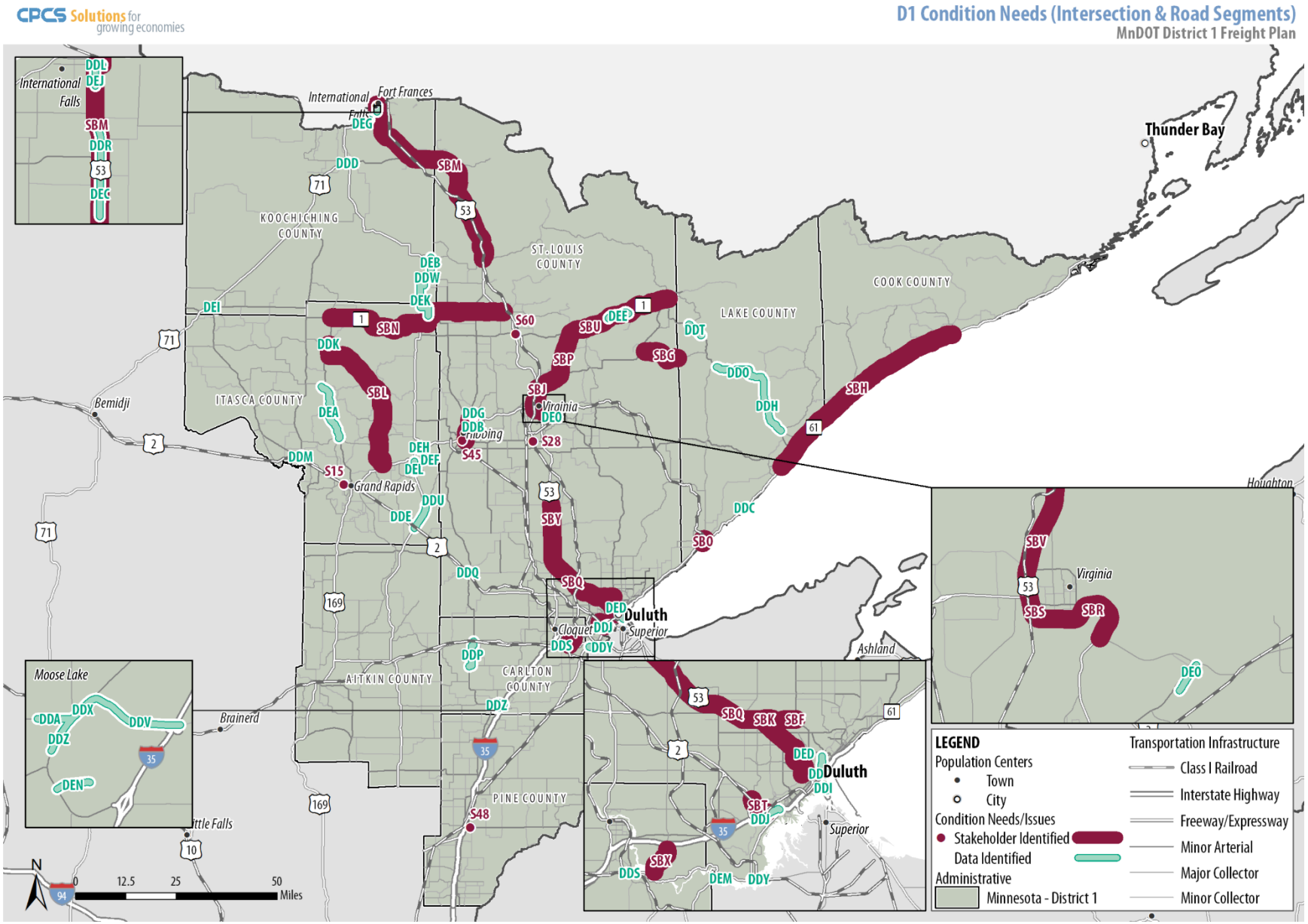
In Figure 2-6, issues identified with an "S" were identified by stakeholders and issues identified with a "D" were identified by data analysis. Each issue is further described in **Appendix A** (Stakeholder) and **Appendix B** (Data).

Figure 2-5: Ride Quality Index (RQI) of 2017 Pavement Conditions



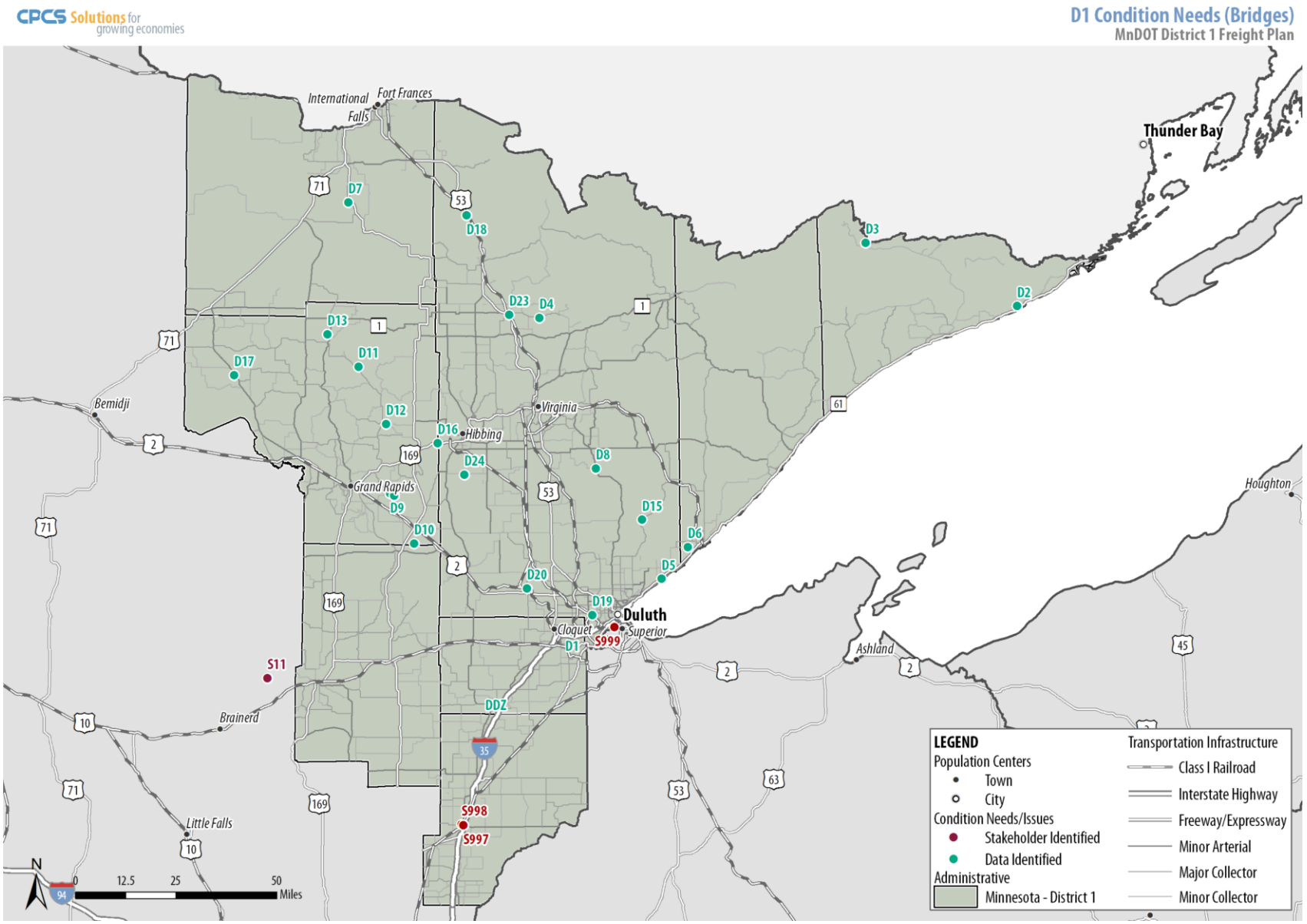
Source: CPCS analysis of MnDOT pavement condition data. 2018.

Figure 2-6: Identified Pavement Condition Needs and Issues



Source: CPCS analysis of MnDOT pavement condition data, Manufacturers' Perspectives Study, stakeholder consultations. 2019.

Figure 2-7: District 1 Bridge Conditions



Source: CPCS analysis of MnDOT bridge condition data. 2018. Two stakeholder identified rail bridge are also shown – the BNSF Grassy Point Bridge, and two bridges on **BNSF's Hinckley Subdivision**.

Bridge Condition

While some stakeholders are concerned about bridge clearances, the condition of the District's bridges was not mentioned as a need or issue. This lack of stakeholder concern generally aligns with previous findings that District 1's trunk highway bridges are in relatively good repair. However, MnDOT bridge inventory data indicates that bridge condition needs and issues are focused on the local road network, and District 1 has the lowest overall average bridge sufficiency rating of any District. Figure 2-7 shows the locations of deficient bridges, where issues identified with an "S" were identified by stakeholders and issues identified with a "D" were identified by data analysis. Each issue is further described in **Appendix A** (Stakeholder) and **Appendix B** (Data).

Figure 2-8 lists the number of deficient bridges in each county of District 1. CPCS analysis of condition only used three factors of bridge condition, while and MnDOT's analyses were more detailed, so the total count of deficient bridges shown in Figure 2-7 is lower than the counts listed in Figure 2-8.

Figure 2-8: Deficient Structures by County (Sufficiency Rating less than or equal to 80)

	Interstate and Trunk	County	Township	City	Total
Aitkin	2	3	3	0	8
Carlton	3	8	1	0	12
Cook	1	15	0	0	16
Itasca	2	17	2	2	23
Koochiching	1	5	1	0	7
Lake	2	3	0	0	5
Pine	0	6	1	0	7
St. Louis	15	62	13	11	101
Total	**26**	**119**	**21**	**13**	**179**
% of District's Total Bridges Deficient	**4.7%**	**12.0%**	**10.7%**	**9.2%**	**9.5%**

Source: MnDOT Minnesota Bridges December 2017.

Ultimately, the lack of stakeholder concern about bridge condition, and the low number of deficient bridges on the interstate and truck system suggests that bridge condition is not a major impediment to freight in the District.

District 1 has a large number of structurally-deficient bridges, but these are concentrated on local roads, and have not been an impediment to freight movement.

2.3 Railroad Needs and Issues

Safety

Grade Crossings

Relative to other road-related topics, grade crossings received much less mention from stakeholders. In general, stakeholders mentioned problems with congestion and delays caused by rail traffic, particularly in Ranier and Hinckley. During the Manufacturers' Perspectives study, some stakeholders also mentioned a general desire for emergency pull-off lanes or hard shoulders to avoid collisions with stopped traffic at railroad crossings. However, feedback on specific areas of improvement was limited to a few crossings. In particular, the following needs or issues were noted:

- A need for improved railroad crossing signage around 5th Avenue West and Railroad Street in Duluth.
- A need for crossing gates at the Scenic Highway 61 crossing southwest of Two Harbors.
- A "hump" on Highway 37's crossing between Highway 7 and US-53 by Long Lake that could potentially conflict with low-hanging trailers.

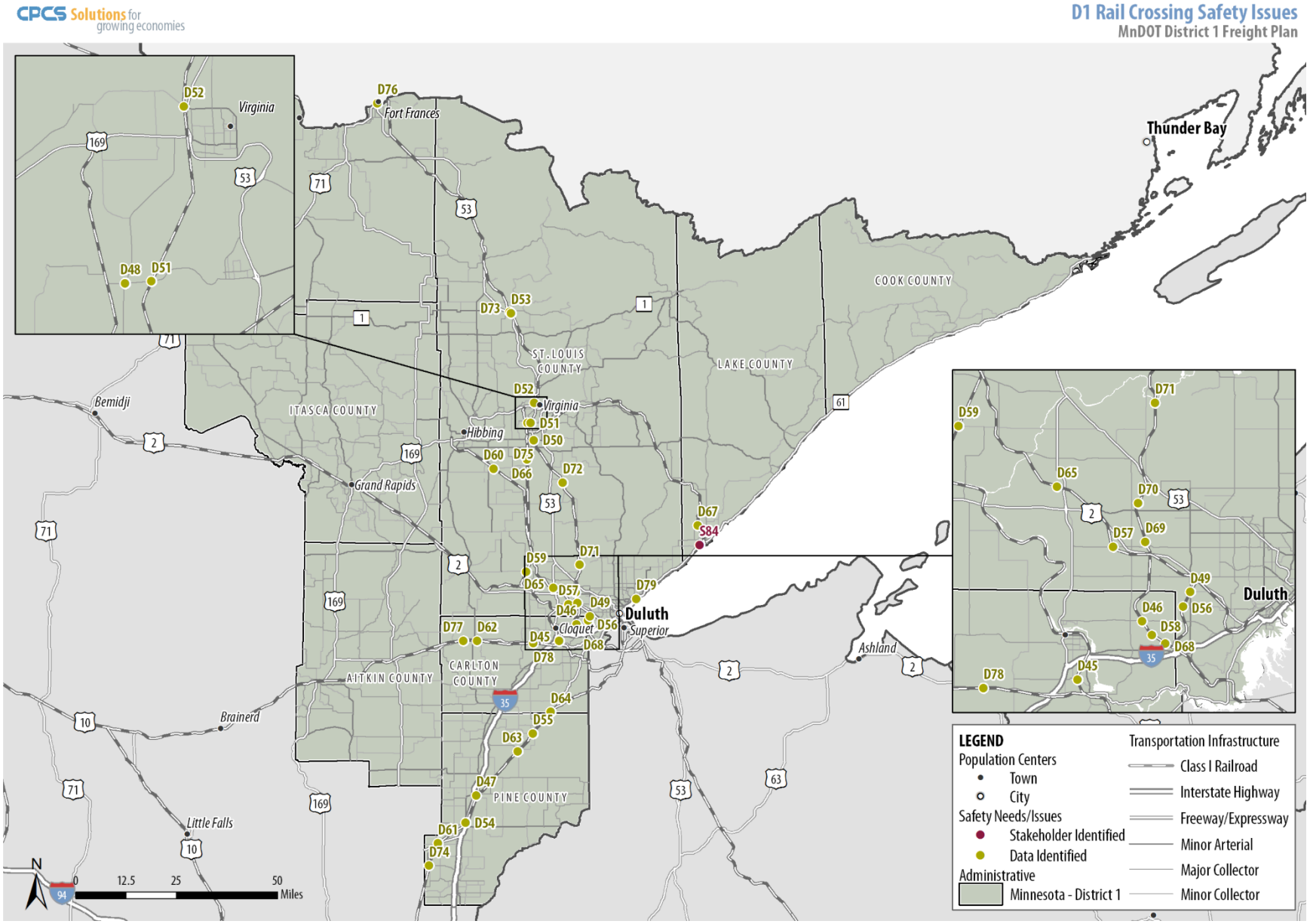
This relatively small amount of stakeholder feedback on grade crossings supports previous conclusions from Working Paper 2, which found that grade crossing safety is not a major concern in District. From a data perspective, MnDOT's safety analysis of District 1's grade crossings identified the CN mainlines between Duluth and Canada as corridors with the highest levels of risk, along with crossings near Duluth and Hinckley. Figure 2-9 illustrates the locations of higher-risk crossings. These areas of highest risk for incidents generally align with stakeholder feedback, with the exception of the Scenic Highway 61 crossing near Two Harbors, which was not considered high risk. However, MnDOT's risk analyses identified far more "risky" crossings than were identified by stakeholders. This difference in perceived risk between stakeholders and analysis could be due to the fact that grade crossing incidents are relatively rare in District 1 (and thus not a key concern for stakeholders), while a risk assessment evaluates risk on a variety of factors beyond previous crash history. In Figure 2-9, issues identified with an "S" were identified by stakeholders and issues identified with a "D" were identified by data analysis. Each issue is further described in **Appendix A** (Stakeholder) and **Appendix B** (Data).

Mobility

Intermodal Service

Previous plans and studies for District 1, Duluth, and northwestern Wisconsin noted a need for truck-rail intermodal service in the region, as intermodal ramps in the Twin Cities were a long drive from the region, and could be congested. Since the completion of previous freight studies, the Duluth Cargo Connect service at the Port of Duluth has brought intermodal service to the District and surrounding areas. This service has proven itself a success, and the Port is engaged in work to increase container handling capacity to 65,000 container lifts per year. Construction of these capacity improvements is expected to be complete in summer 2019, and is likely to generate additional truck traffic around the Port of Duluth, as well as the District's trunk highways.

Figure 2-9: District 1 Grade Crossing Incidents, 2004-2013



Source: CPCS analysis of MnDOT Rail Grade Crossing Safety Data. 2018.

Competitive and Reliable Service

In general, the operation of four Class I railroads in the District, particularly in Duluth, is seen as a competitive advantage. However, some firms outside of Duluth, expressed a desire for more competitive rail service. In particular, rail service quality is a major concern, as declines in the reliability of rail service threaten the competitiveness of firms and force freight onto the road network. For example, the 2015 State Rail Plan noted that in 2010, CN's Rainy subdivision between Duluth and International Falls had an elevated volume-to-capacity ratio due to a lack of modern signalization. Also, the University of Minnesota's economic cluster report noted that rail lead times for certain trade lanes had doubled over the past 25 years. This problem of capacity was particularly acute during the Bakken oil boom of the late 2000s, when railroads diverted motive power to serve more-profitable oil unit trains. This need has been consistently noted in the prior District 1 freight plan, economic cluster analyses from the University of Minnesota, the Manufacturers' Perspectives study, and stakeholder outreach for this current freight plan. For example, MnPower had difficulty securing adequate Union Pacific service to support its coal-fired powerplant in Cohasset, a problem that has since been resolved by the idling of two smaller boilers at the plant, as well as improved Union Pacific service since the decline in Bakken Oil traffic. Since railroads are privately owned and operated, there may be little opportunity to introduce new rail competition into most areas of District 1.

A similar concern, related to reliable service, was a potential lack of available rail cars and locomotives. Some industries that rely on smaller shipments of rail-borne commodities (instead of entire unit trainloads) noted that a lack of available railcars was causing unreliable rail service as well. Similarly, during the Bakken oil boom, the CN lacked enough locomotives to serve iron producers, resulting in the movement of taconite by truck. However, the most recent stakeholder outreach for this project generally noted that competitive service and reliable schedules were a concern, and stakeholders did not specifically mention a shortage of railcars.

Infrastructure Condition

Bridge Condition

This District 1 Freight Plan does not include a detailed assessment of railroad bridge conditions, however the 2015 State Rail Plan noted two areas in the District where bridge improvement or replacement is needed:

- **Grassy Point Bridge**. The Grassy Point Bridge between Duluth and Superior was built in 1912, and may need to be replaced in the future. A proposed replacement that could provide faster service between Superior and Duluth was estimated to cost $51 million.
- **BNSF Bridges on Hinckley Subdivision**. The BNSF line from Duluth to the Twin Cities has four single track bridges that need replacement. The cost to replace these bridges was estimated at $25 million.

These bridges are both shown in Figure 2-7.

Track Condition

Generally speaking, the District's railroad assets are in good condition, and capable of handling large volumes of freight at relatively high (45+ mph) speeds. The exceptions to this are the CN's connections between the Iron Range and Two Harbors, and short line railroads like the Northshore Mining line to Silver Bay, St. Croix Valley, and NSSR, which have slower speed limits.[18]

2.4 Port and Waterway Needs and Issues

Many of the port and waterway needs and issues related to road needs and issues discussed above, as truck access to the port was a frequent concern. However, there are also some unique maritime needs and issues related to maintenance of channels and harbors, and preservation of port adjacent land use.

Mobility

Improve OSOW access to Duluth-Superior

The Port of Duluth handles a large volume of oversize-overweight (OSOW) freight that arrives or departs from the Port via truck. There are three potential barriers to movement of these oversized loads that were mentioned by stakeholders, and identified in data analysis:

- Low-clearance bridges, particularly Jenswold Street immediately west of the CN ore docks.
- Steep hills for leaving the port and traveling, west, south, or north.
- Tight curves and blind merges by the Blatnik Bridge and Twin Ports Interchange.

Infrastructure Condition

Rebuild Twin Ports Interchange "Can of Worms"

The poor condition and low weight capacity of the Twin Ports Interchange (TPI), or "can of worms" was noted repeatedly by stakeholders, as oversize or overweight truckloads accessing the Port must use surface streets instead. However, the TPI is expected to be rebuilt beginning in 2020, with designs for improved first- and last-mile access to the Port of Duluth.

Harbor and Channel Maintenance

During stakeholder consultations for the current District 1 Freight Plan, port stakeholders noted that maintaining adequate harbor and channel depth can be a challenge because dredged materials contaminated with industrial runoff or other pollution must be treated or disposed of properly, and there is limited space to dispose of dredged material onshore. Furthermore, the US Army Corps of

[18] Minnesota Freight Railroad Map. OFCVO. June 2015.

Engineers, which administers dredging programs, has a dredging backlog, which means that dredging needs may not be met in a timely manner.

Preserve Harbor Land for Industrial Use

Waterfront property suitable for industrial use may also be attractive to commercial and residential development, creating potential land use and passenger-freight conflicts if waterfront industrial land is re-developed as residential or commercial property. Port-related stakeholders have recognized the importance of preserving land for industrial use, and the Duluth-Superior Port Land Use Plan provides local stakeholders with information on port land use, and guidance on how industrial land uses should be preserved. However, tension still remains between some landowners who favor redevelopment, and industrial stakeholders in the area. An area with particular potential for land use conflict are parcels on Railroad street, especially those adjacent to existing commercial property such as Pier B Resort.

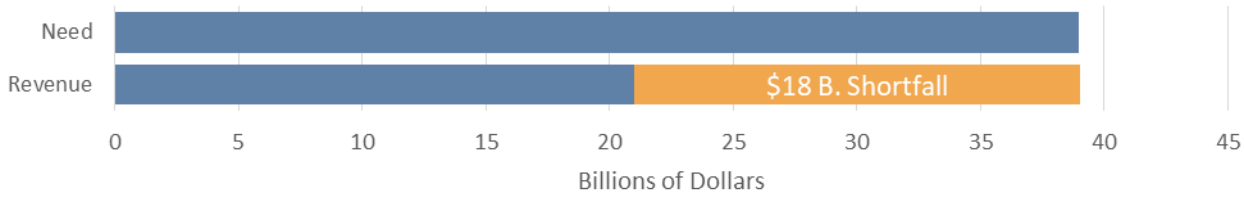
2.5 Freight Funding

2.5.1 Minnesota State Highway Investment Plan

Previous plans for District 1, Minnesota, and the nation as a whole have indicated that a relative lack funding for transportation infrastructure maintenance, improvement, and expansion is a key challenge. For example, MnDOT's fiscally-constrained capital program, the 2018-2037 Minnesota State Highway Investment Plan (MnSHIP), estimates that over the next 20 years, $39 billion of investments are needed to support the state highway system, but only $21 billion will be available. As a result, there is an estimated $18 billion funding gap.

This lack of funding has two major causes: construction costs are growing more quickly than revenue, while revenue growth continues to slow. The revenue gap is particularly relevant to District 1, which has an extensive transportation system, but lacks the population (and thus tax base) to support the level of investment needed to maintain the system.

Figure 2-10: Minnesota Highway Investment Need and Forecasted Revenue, 2017-2037



Source: Adapted from Minnesota State Highway Investment Plan, 2017

The condition of the District's freight system will be more difficult to maintain in the future, as revenue will grow more slowly than increases in maintenance costs.

The Minnesota State Highway Investment Plan outlines the strategic direction for the state and aims to balance competing investment priorities that include enhancing the condition of existing system and building new infrastructure. This is a challenge given the gap between available revenue and system need. But, to aid MnDOT in ensuring adequate funds are being directed toward system needs, the MnSHIP has established investment objectives and investment categories – wherein a single MnDOT project may include investment from multiple categories, and MnDOT can track that overall investments are being made in priority areas.

Figure 2-11 and Figure 2-12 illustrate this investment direction and highlight that the System Stewardship objective, which is focused on strategically building, managing, maintaining, and operating all transportation assets, receives nearly 70 percent ($14.46 billion) of available funds. Projects that improve pavement condition (49 percent) and bridge condition (11 percent) receive most of this Stewardship funding. Project delivery ($3.27 billion, 16 percent) is the second largest category behind pavement condition, and is aimed at implementation which is key to improving the system.

The 2018-2037 MnSHIP marks the first time MnDOT has identified dedicated freight funding for projects.

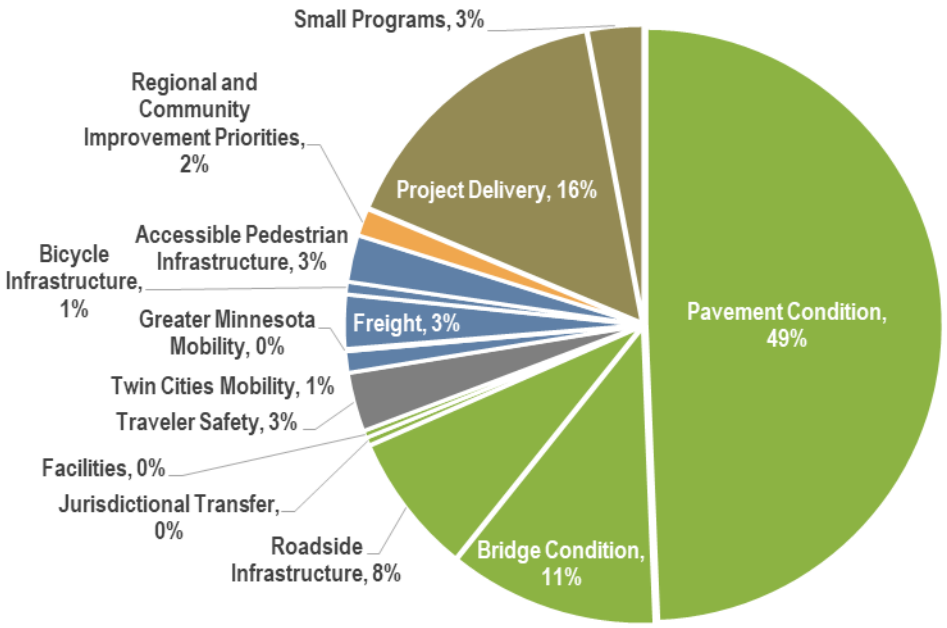
The Critical Connections objective ($1.55 billion, 7.4 percent) is focused on maintaining and improving multimodal transportation connections, as well as strategically considering new connections. This objective includes a freight-specific investment category ($610 million, 2.9 percent) that is directly linked to the FAST Act-established National Highway Freight Program (NHFP). As part of this Minnesota will receive approximately $20 million a year to make freight-related improvements to the highway system, however, up to 10 percent of the funds can be used for public or private freight facilities such as rail, water and intermodal facilities. MnDOT has established the Minnesota Highway Freight Program (MHFP) with these funds.

Figure 2-11: Minnesota's 20-Year Capital Highway Investment Direction

Investment Objective	Investment Category	2018-2037 $ (B)	Percent Share
System Stewardship	Pavement Condition	$10.31	69.2%
	Bridge Condition	$2.38	
	Roadside Infrastructure	$1.60	
	Jurisdictional Transfer	$0.09	
	Facilities	$0.08	
Transportation Safety	Traveler Safety	$0.67	3.2%
Critical Connections	Twin Cities Mobility	$0.24	7.4%
	Greater Minnesota Mobility	$0.03	
	Freight	**$0.61**	
	Bicycle Infrastructure	$0.14	
	Accessible Pedestrian Infrastructure	$0.53	
Healthy Communities	Regional and Community Improvement Priorities	$0.31	1.5%
Other	Project Delivery	$3.27	18.7%
	Small Programs	$0.63	
	Total	**$20.89**	**100%**

Source: Adapted from Minnesota State Highway Investment Plan, 2017

Figure 2-12: MnSHIP Expenditures by Investment Category ($Billions)



Source: Adapted from Minnesota State Highway Investment Plan, 2017

2.5.2 Freight-Specific Funding

The FAST Act ushered in a new era of freight project implementation by establishing the National Highway Freight Program, and MnDOT recognized this by introducing an investment category dedicated to freight in the MnSHIP. However, MnDOT does has a history of providing grant and loan funding for freight-related projects as shown in Figure 2-13.

Figure 2-13: Overview of MnDOT Freight-Related Funding Programs

Source	Funding Available	Eligible Uses
Minnesota Highway Freight Program (MHFP)	$98 million total programmed through 2022	Program funds are broad and include improvements such as climbing lanes, traffic signal optimization, and railway-highway grade separation, among others.
Railroad At-Grade Crossing Safety Program (Section 130)	~$6 million per year, federal and state match	Closures/consolidations of railroad crossings and railroad crossing safety projects at high risk locations.
Minnesota Railroad Service Improvement Program (MRSI)	~$900,000 per year, not regular	Projects that improve "fixed assets" such as railroad roadbed, tracks, turnouts, bridges, buildings, and fixed loading/unloading equipment.
Port Development Assistance Program	~$3-5 million every bonding year	Projects that improve or develop a commercial navigation facility or its components, including dock and terminal repair, on-dock equipment, etc.
Weigh Station and Commercial Vehicle Safety/Enforcement Program	$2 million per year, state funds	Projects that maintain or improve commercial vehicle enforcement and safety.

Source: Adapted from MnDOT Office of Freight and Commercial Vehicle Operations.

These freight-related funding programs have helped the state address critical freight system needs. In particular, MnDOT's programs have made significant investments in the maritime and rail systems – two modes where traditional highway dollars are difficult to spend in. However, a challenge with these programs is that the level of funding is low compared to the need, and not all funding programs are available on regular basis (e.g., yearly), nor guaranteed they will be available in the future.

MnDOT's maritime and rail funding programs have helped address freight system needs where traditional highway system funds could not.

More information is provided on MnDOT's freight-related funding programs in the following sections.

Minnesota Highway Freight Program

The Minnesota Highway Freight Program (MHFP) is directly linked to the FAST Act-established National Highway Freight Program (NHFP). As part of this Federal program, MnDOT is apportioned approximately $20 million a year and may determine its own process for selecting projects to receive this funding, as long as it is used for freight-related investments. MnDOT elected to select projects through a competitive process and evaluated applicants on criteria that included truck volume, safety, mobility, facility access, and other factors as shown in Figure 2-14.

Figure 2-14: Minnesota State Freight Investment Plan Criteria

Criteria	Measures
Truck Volume	HCAADT
Safety	• Crash rate reduction • Addresses a sustained crash location (Y/N) OR Not sustained crash location, but addresses a safety issue identified in a district or county safety plan (Y/N). If so, provide risk rating. • For truck parking projects: truck parking utilization at existing rest stops
Freight Mobility	• Truck Travel Time Reliability • Removes a geometric or temporary (e.g. flooding) barrier or avoids future load restriction on an OSOW route (Y/N) • Upgrades a roadway to 10-ton standards
Freight Facility Access	Daily truckload equivalents entering and exiting a freight facility or facilities
Cost-Effectiveness	Divide amount of points awarded above by amount of requested funds divided by 1000
Project Readiness	A variety of measures including: Environmental Documentation, Review of Sec 106 Historic Resources, Review of Sec 4f/6f Resources, Right-of-Way, Construction Plans/Documentation, Railroad Involvement, and Funding

Source: Adapted from Minnesota State Freight Investment Plan for State Fiscal Years 2016-2027, November 2017

In total, 36 applications were received requesting $248 million. Using available funds, $98 million of those requests were programmed through 2022, again indicating that freight

transportation system needs far outweighs available resources. Additionally, this MHFP solicitation program was a one-time opportunity and may not continue in the future, as these funds may not again be authorized at the Federal-level, or MnDOT's Office of Freight and Commercial Vehicle Operations may elect to use a different process to select projects (e.g., through statewide and District freight system planning efforts).

The MHFP solicitation program was a one-time opportunity and may not continue in the future

In District 1, MnDOT and the City of Duluth submitted applications requesting $20,525,565, and the Twin Ports interchange was awarded $6 million. In addition, the MHFP solicitation specifically requested ports and waterways intermodal project submissions, and the Duluth Port Intermodal Terminal Expansion was awarded $1.9 million.

Railroad At-Grade Crossing Safety Program

MnDOT administers the Federal Highway Administration Section 130 grade crossing safety program funds for Minnesota, which provides about $6 million per year. Given the current cost of grade crossing equipment and design, this allows the funding of about 25 major projects each year. While the cost of new installations has been steadily inflating, the Federal funding has remained relatively static over the last several years, resulting in fewer projects being possible each year.[19]

In 2016 MnDOT conducted a study[20] to examine its processes for evaluating at-grade rail crossings and prioritizing grade crossing improvement projects. The research found that the density of fatal plus injury crashes is very low and that nearly 91 percent of crossings had no crashes of any kind during the study period. This data, combined with the historic use of crash prediction models to prioritize crossing improvements, indicated to MnDOT that too much emphasis has been placed on crash history as a factor in making future investments. MnDOT is now using a risk-based approach for statewide crossing evaluation, and using the results to work collaboratively with local jurisdictions to advance projects.

MnDOT's approach to rail crossing investment relies on partnership with local jurisdictions to advance projects.

MnDOT's Office of Freight and Commercial Vehicle Operations (OFCVO), Railroad Safety and Coordination Unit solicits projects annually to advance closures/consolidations of railroad

[19] Draft Minnesota State Rail Plan, March 2015
[20] Rail Grade Crossing Safety Project Selection, June 2016

crossings and railroad crossing safety projects at high-risk locations, as identified by the statewide crossing evaluation. MnDOT is currently working on addressing crossings that have a risk-rating of 7 (on a scale of 1-9, projects that scored an 8 or 9 were addressed in prior years), and is soliciting projects for state fiscal year 2021 funding (July 1, 2020 – June 30, 2021). There are several projects eligible for funding in District 1. Projects will be announced in February 2019; there is no apportionment (or minimums/maximus per year) by District for this program.

Minnesota Railroad Service Improvement Program

The Minnesota Rail Service Improvement Program (MRSI), established in 1976, helps prevent the loss of rail service on lines potentially subject to abandonment by railroads. Today this programs provides both loans and grants to railroads, rail users and political subdivisions of Minnesota and the federal government.

The MRSI **loan program** continually accepts applications. In 2005, the Minnesota Legislature appropriated $1.5 million in bond funds to the MRSI Program, and again appropriated $2.0 million in 2006. With these initial appropriations, the MRSI loan program now is self-funding with quarterly receipts from previous loans used at the discretion of MnDOT. Each loan is capped at $200,000 per project. Loans can be used:

- to pay a portion of the costs of rail capital improvement projects such as side track, connections between existing lines, construction of loading, unloading, storage and transfer facilities,
- to acquire, maintain, manage and dispose of railroad right-of-way,
- to pay a portion of the costs of acquiring a rail line by a regional railroad authority,
- to pay the state matching portion of federal grants for rail-highway grade crossing improvement projects, as well as for other purposes.[21]

Loans must be repaid to the State over a period of 10 years

MnDOT is also currently soliciting for the MRSI **grant program** which does not have a dedicated funding source. The program does not have minimum or maximum funding requirements, other than what is obligated on a semi-regular basis by the Minnesota Legislature.

The MRSI rail grant program is dependent on legislative action for funding.

[21] Minnesota Rail Service Improvement Program Loan Application

In 2017, $1 million of general obligation bonds that were authorized during the legislative session. Grant funds can only be used for direct railroad-related "fixed assets" on railroad right of way or at railroad facilities, specifically:

- Railroad tracks and turnouts (track rehabilitation, new track construction, etc.)
- Railroad bridge construction or rehabilitation (286k upgrades or replacement of bridges that have reached the end of their useful life)
- Fixed railroad loading and unloading facilities which are used primarily for the shipment of goods by rail
- Railroad components of intermodal facilities (i.e. railroad tracks, turnouts and any fixed assets that facilitate the direct loading and unloading of railcars)[22]

These grants cannot be used for regular or recurring maintenance activities.

In 2018 $1.9 million in project requests were received from 9 applicants, the majority of which are Class III railroads. The selections have not yet been announced.

Port Development Assistance Program

In 1996, the Minnesota Legislature provided funding to initiate the Port Development Assistance Program (PDAP). This program has been continuous since its inception and provides between $3-5 million every bonding year. The PDAP program is an important part of infrastructure funding for ports in the state. For the Winona, Red Wing and St. Paul Port Authorities, this funding represents the entirety of their capital improvement budget. And, since its inception, the PDAP has accounted for roughly half of the capital improvement budget for the Duluth Seaway Port Authority.[23]

Minnesota ports heavily depend on the PDAP program which is only available in bonding years.

The PDAP may provide funds for up to 80 percent of eligible project costs, and applicants are required to provide a minimum 20 percent funding match. Types of projects that are eligible through this program include:

- dock and terminal repair,
- capital improvement to a commercial navigation facility,

[22] Minnesota Rail Service Improvement Program, Funding Solicitation for 2018 Freight Rail Service Improvement Grants Supporting Economic Development

[23] Minnesota Statewide Ports & Waterways Plan, September 2014

- support equipment directly related to loading or off-loading cargo to/from a vessel, and
- disposal facility construction or repair.

Eligible costs include final engineering, construction costs and dredging. Costs that are not eligible include items like the cost of acquiring permits or preparing environmental documents, feasibility studies, conceptual project designs, and other items.[24]

In late 2018 PDAP solicited for projects and approximately $5.3 million was available. In total, four applications were received and the Duluth Port was awarded $2.2 million for vessel mooring and storage area. While this is a competitive program there are currently only 4 regular applicants, each of which are members of the Minnesota Ports Association.

Weigh Station and Commercial Vehicle Safety/Enforcement Program

The Weigh Station and Commercial Vehicle Safety/Enforcement Program has approximately $2 million of state funds available each year. This program is focused on making investments that maintain or improve commercial vehicle enforcement and safety. There is currently an estimated $96 million funding gap for weigh and safety enforcement needs, of which approximately $48 million are capital needs. The MnSHIP indicates that for facilities (inclusive of weigh stations and general rest areas) there is a $390 million 20-year need, with only $80 million planned investment.

This MnSHIP indicates that weigh scale and weigh station replacement will not keep up with need, resulting in outdated or inoperable sites in the future.

In District 1, MN-WI bridge crossings in Duluth-Superior were identified as key points needing additional enforcement investment but of which there is no funding available and no land/room to do it. The Saginaw Weigh Station, located west of the MN-2 and MN-33 interchange, near Duluth also has long-term improvement needs.[25]

[24] Port Development Assistance Program, Funding Solicitation for 2018 Port Development Projects
[25] As indicated by MnDOT Office of Freight and Commercial Vehicle Operations

3 SWOT Assessment

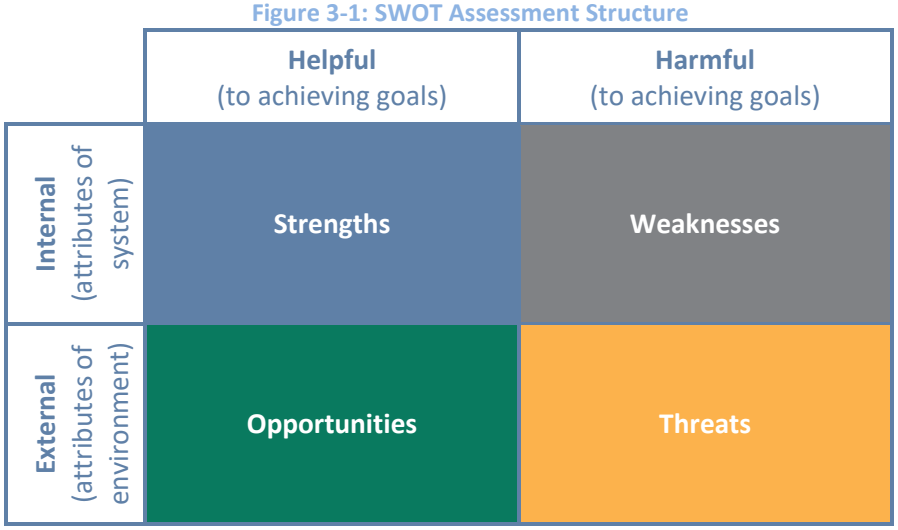
Key Findings

Examining District 1's external and internal influences is useful in forming strategies to improve the freight system, with an eye toward what will be most needed and appropriate in the future. This assessment of District 1's freight-relevant Strengths, Weaknesses, Opportunities, and Threats (SWOT analysis) touches on economic, mobility, condition, safety, social, and environmental aspects of the freight system. A foundational strength of District 1 is its multimodal assets and their connections to North American markets. However, a foundational weakness is the need to maintain these assets in the face of uncertain funding sources or levels.

3.1 Strengths, Weaknesses, Opportunities and Threats

A strengths, weaknesses, threats, and opportunities assessment – referred to as a SWOT Assessment and shown Figure 3-1 – provides a structured means of exploring an issue. To better organize the myriad information collected during freight plan development, District 1's freight system SWOT's were assessed based on the information presented in this Working Paper (Needs, Issues, and Opportunities), Working Paper 2 (Freight System Profile), and feedback from the Advisory Committee and Technical Team.

Figure 3-1: SWOT Assessment Structure



Specifically, for the District 1 SWOT Assessment, the factors reviewed include:

- **Strengths** – Internal factors that give the District and its communities and businesses an advantage over others. *These were broadly presented in Working Paper 1 as part of the District's economic and freight system profile.*

- **Weaknesses** – Internal factors that place the District and its communities and businesses at a disadvantage relative to others. *These were broadly described in Chapter 2 of this working paper. District 1's weakness can be described as its needs and issues.*
- **Opportunities** – External factors that the District and its communities and businesses could capitalize on to its advantage. *These were broadly described in Chapter 1 (Future Outlook) of this working paper.*
- **Threats** – External factors that could create challenges for the District and its communities and businesses. *These were broadly described in Chapter 1 (Future Outlook) of this working paper.*

This SWOT Assessment is organized in line with the Minnesota Statewide Freight System Plan's five main goals, which reflect those aspects of the multimodal freight system that are most important to the public and private sector freight stakeholders in the state. These goal areas are to:

- Support Minnesota's Economy
- Improve Minnesota's Mobility
- Preserve Minnesota's Infrastructure
- Safeguard Minnesotans
- Protect Minnesota's Environment and Communities

A separate SWOT Assessment was conducted for each of these five goal areas, which are also the primary goals of the District 1 Freight Plan.

3.2 Economy

Broadly defined, the Minnesota Statewide Freight System Plan's economic goal is to **Support Minnesota's Economy.** Specifically, the economic goals for the freight system are to provide a system that:

- Operates efficiently.
- Connects to the rest of the world.
- Responds and adjusts to changing economic conditions.

These elements informed the economic-related SWOT Assessment shown in Figure 3-2. During the assessment common topics emerged, several of which are applicable to multiple SWOT (freight plan goal) areas:

- **Natural Resources**. District 1 has a wealth of natural resources, which have been a strength and enabled the development of the District's economy. In the future, these resources could create opportunities for further economic development. However, reliance on natural resource industries can also be weakness and a threat, as prices for iron and timber can be greatly affected by global market conditions outside of the

District's control, resulting in potential "boom and bust" cycles that jeopardize stable economic conditions.

- **Multimodal Freight System**. District 1 has a unique strength in the form of robust and varied multimodal freight assets, including four Class I railroad operators, and a large deep water port. These assets also give the District a second strength: robust connections to the rest of North America, and global markets. For example, the CN railroad provides Duluth with direct access to Pacific, Atlantic, and Gulf ports, as well as Chicago, and the St. Lawrence Seaway provides lower-cost access to ocean trade routes. Further development of the District's multimodal assets – including container service at the Port of Duluth could provide opportunities for further economic growth.
- **Ample Room to Grow**. District 1's communities generally have ample room to grow while avoiding future freight and residential land use conflicts.
- **Aging Population**. District 1's aging population and low population growth could jeopardize future economic growth if insufficient workers are available to support workforce needs.
- **System Maintenance**. While District 1 has a strong freight system, maintenance for such a system must be done continuously, and poor condition or performance could have a negative impact on economic competitiveness. This topic of maintenance is discussed in greater detail in the "Infrastructure" SWOT Assessment.
- **Different Decision-making "Speeds."** Public decision-making takes longer than private sector decision-making, which means that decisions to invest in infrastructure can lag behind business investment decisions. However, MnDOT also has the opportunity to be proactive in working with the private sector, such as with the Manufacturers' Perspectives Study.

Figure 3-2: District 1 Economic SWOT

Strengths	Weaknesses
• A diverse industrial base, including manufacturing and mining • A range of multimodal freight assets (road, rail, port, and air) • Multimodal connections to rest of North America • Natural resource assets (mining, forestry)	• Economy built on cyclical "boom and bust" resource industries, especially iron ore • Aging population, with low population growth
Opportunities	**Threats**
• Continued improvement of port and multimodal (road-rail) facilities • Room to grow without major conflicts between land uses • Continued development of natural resources • MnDOT can be proactive in working with private sector	• Maintenance and upgrades to freight transportation assets to adequately serve industry needs • Market forces, commodity prices, and tariffs • E-commerce traffic: more freight traffic for same tonnage of goods • Public and private sectors move at different paces – private makes decisions more quickly

3.3 Mobility

The Minnesota Statewide Freight System Plan seeks to **Improve Minnesota's Mobility** because a freight system with impaired mobility (such as congestion), is unattractive for industries, and may place them at a competitive disadvantage. Therefore, the freight plan established two general objectives:

- Access for all freight users.
- Reliable service with minimal chokepoints.

These elements informed the mobility-related SWOT Assessment shown in Figure 3-3. During the assessment common topics emerged:

- **Low Congestion**. Analysis of truck speeds, travel time index, and travel time reliability show that there is very little truck congestion in District 1, and the District's companies can generally expect goods to arrive on time. One potential area for congestion is the Twin Ports Interchange, which is likely to become a site for acute regional congestion during its reconstruction in the coming years.
- **Challenges with Two-Lane Roads**. The District's rough terrain and relatively low traffic volumes mean that many freight corridors are two-lane roads, with few options for passing or overtaking. These two-lane freight corridors such as much of US-169 are a weakness for mobility, but they also present MnDOT and local partners with an opportunity to make smaller-scale improvements such as hardening shoulders or adding passing lanes during reconstruction work.
- **Weight Limits**. Many stakeholders have noted that weight limit issues are weaknesses for the District because they limit the effective capacity of each truck trip, making truck operations less effective. Particular concerns are spring load limits, particularly for forestry, as well as Minnesota's relatively lower weight limits compared to Wisconsin, and Ontario. Local weight limits were also a weakness on first- and last-mile connections between trunk highways and local businesses, as they forced trucks to carry less cargo, or take circuitous routes to reach freight facilities.
- **Bridge Clearances**. As noted in Working Paper 2, the District has a variety of low-clearance bridges which are a mobility weakness because they can be an impediment to the movement of oversized freight.
- **Railroad Service**. For stakeholders engaged or interested in rail shipments, a lack of competitive or reliable rail service has been a weakness for the District. However, the presence of the Duluth intermodal terminal is a strength for firms interested in using intermodal containers to ship and receive goods, or access foreign markets.
- **Truck Driver Shortage**. Some stakeholders noted that the growing national truck shortage is a threat to the District's firms that rely on truck shipments, as firms must pay more to retain drivers, and a lack of drivers could affect reliability of service. However, connected or autonomous vehicles provide an opportunity to overcome the limits of this shortage.

- **Tourist Traffic**. Potential conflicts with tourist traffic were mentioned during Advisory Committee meetings, as well as in previous studies. The two main conflicts are congestion at special events, and tourist traffic passing trucks on two-lane roads.
- **Chokepoints**. Bridges and border crossings are weaknesses because they can act as chokepoints on the freight network, forcing trucks to take longer routes, or slowing their movement.
- **E-commerce**. Some stakeholders mentioned that e-commerce is a threat to mobility in portions of the Twin Cities, where delivery trucks have been replaced by fleets of contractors in private vehicles, effectively increasing vehicle traffic, while holding freight tonnage steady. If District 1's consumer e-commerce activity grows, similar freight shifts may occur.

Figure 3-3: District 1 Mobility SWOT

Strengths	Weaknesses
• Very little traffic congestion • Intermodal terminal provides easier access to rail mode, foreign markets	• Hilly or swampy landscapes require steep or curving road geometry, potentially slowing truck traffic • Many freight corridors are two-lane roads • Weight restrictions, including spring load restrictions, and lack of weight policy harmonization between states/provinces • Lack of competitive or quality rail service outside Duluth • Low clearance bridges can impede truck movement • Bridges and border crossings as chokepoints
Opportunities	**Threats**
• Spot mobility improvements during programmed maintenance (addition of turning lanes, passing lanes, traffic signals) • Improve 1st/last 3-mile connections to the Trunk Highway system • Connected/autonomous vehicles to overcome truck driver shortage	• Minnesota's truck weight policies are stricter than Wisconsin's or Ontario's • Twin Ports Interchange reconstruction • Future truck driver shortage • Conflicts with tourist traffic • E-Commerce: more freight traffic for same tonnage of goods

3.4 Infrastructure

The Minnesota Statewide Freight System Plan seeks to **Preserve Minnesota's Infrastructure** in the face of increasing traffic volumes through two areas for strategic improvements:

- Ensure critical segments and connections are available
- Ensure these segments and connections are in a good state of repair

These elements informed the infrastructure-related SWOT Assessment shown in Figure 3-4. During the assessment common topics emerged:

- **Redundancy**. Stakeholders and previous studies noted the District has a lack of system redundancy for multiple modes. For the road network, there are a lack of parallel corridors that can reliably handle detoured traffic from routes such as MN-61 during a

shutdown. This was demonstrated during a brief 2017 shutdown of MN-61 after an oversized truck struck a bridge in Taconite Harbor. Redundancy weaknesses and threats extend to the rail and maritime systems as well. For example, a closure of the Poe Lock at the Soo Locks would prevent the movement of "1,000-footer" lake freighters critical to shipment of iron ore from Minnesota.

Redundancy also offers opportunities to improve or implement new incident management practices, which could reduce delays or downtime if road infrastructure is blocked.

- **Road Condition**. A general strength of the District is the fact that major freight corridor condition is generally favorable. However, many county and local bridges are structurally deficient.
- **Funding Availability**. With this freight plan, the District has the opportunity to identify freight improvements that could be addressed through existing maintenance and safety improvement programs, rather than dedicated freight funding programs. This ability to potentially address freight needs through other funding mechanisms is important because a lack of reliable freight funding is a threat to maintenance of the District's system.

Figure 3-4: District 1 Infrastructure SWOT

Strengths	Weaknesses
• Relatively well-maintained trunk highways and bridges.	• Lack of system redundancy (examples: Soo Locks, CN Bridge in Ranier, MN-61) • Poor condition of county and local bridges
Opportunities	**Threats**
• Opportunity to identify freight projects that can help improve other aspects of the system (e.g., safety) and leverage non-freight funds (e.g., safety) to make improvements • Incident management (low clearance bridge on MN-61 that fell, rock slide)	• To some extent, at mercy of neighbor states (WI, ON) to maintain routes that are critical to the District • Soo Lock closure • Lack of reliable, flexible freight funding

3.5 Safety

The Minnesota Statewide Freight System Plan seeks to **Safeguard Minnesotans** in two key ways:

- Enhance freight system safety
- Ensure plans are in place to protect areas where freight activity and the public interface

These elements informed the safety-related SWOT Assessment shown in Figure 3-5. District 1's Safety SWOT is mixed. Some elements of the freight system, such as grade crossings, are strong, with relatively low crash rates. However, overall road crash rates are higher than many other Districts, suggesting that highway safety is a potential weakness for District 1. A safety-related opportunity is the potential to address freight issues when making safety-related improvements such as rebuilding intersections or adding shoulders. Finally, one threat noted from stakeholders is the placement of freight routes through residential area such as London Road in Duluth, which meant that hazardous materials may be passing through more socially-sensitive areas.

Figure 3-5: District 1 Safety SWOT

Strengths	Weaknesses
• Relatively low at-grade crossing incident rate compared to other districts	• Relatively high road crash rate compared to other districts
Opportunities	**Threats**
• Safety improvements (passing lanes, turn lanes, redesigned intersections etc.) can provide freight benefits • Incident management to enable informed decision-making for system users/responders	• Hazardous materials movements may pass through residential areas (ex: London Road).

3.6 Environment and Community

Finally, the Minnesota Statewide Freight System Plan seeks to **Protect Minnesota's Environment and Communities**. The Freight Plan's goal for environment and communities is:

"Plan, design, develop, and preserve the freight system in a way that respects and complements the natural, cultural, and social context and is consistent with the principles of context-sensitive solutions."

This goal informed the environmental and community-related SWOT Assessment shown in Figure 3-6. During the assessment common topics emerged:

- **Land Use Choices**. A strength of District 1 is its large amount of available land, which allows for the development of new freight-related businesses and facilities away from conflicting land uses such as residential and commercial areas. The one notable exception is waterfront industrial land around the Port of Duluth, which is potentially attractive for residential and commercial developments that could conflict with freight operations. A similar environmental and land use issue is the need for space to store dredged material in Duluth, as a lack of space limits dredging operations.
- **Freight Routing**. While there is land to expand, some historic business development and highway routings mean that freight corridors such as US-169 are routed through developed areas, include some cities' downtowns. This routing through densely developed areas is a weakness because it can slow the movement of trucks, and creates more potential for collisions or other incidents.
- **Water Quality**. A potential weakness of snow and ice removal efforts in the District is their impact on ground and surface water, as the use of salt and other deicing solutions can contaminate water, and could be subject to greater regulation in the future. At the same time, Great Lakes-wide concern over the introduction of invasive species via ship ballast water has resulted in ongoing work to regulate the treatment and release of ballast water. These regulations may have the effect of increasing the cost of operations for foreign vessels traveling to Duluth, making maritime transportation a less-competitive transportation option.

Figure 3-6: District 1 Environment and Community SWOT

Strengths	Weaknesses
• Relatively little conflict between land uses	• Some major freight routes pass through residential and commercial neighborhoods • Running out of space for storage of dredged material at Duluth-Superior harbor • Snow and ice control methods have negative impact on water quality (not freight-specific)
Opportunities	**Threats**
• Room to expand without conflict between land uses (residential and commercial vs. industrial)	• Competing land uses at the Port of Duluth-Superior • Ballast water and aquatic invasive species • Hazardous materials movements may pass through residential areas (ex: London Road).

4 Freight System Opportunities

Key Findings

The SWOT analysis demonstrates that while District 1's freight system is not without its needs and issues, it also has many advantages, and there are opportunities to improve the system. Opportunities can be broken down into four types: projects, programs, policies, and partnerships, and each of these categories plays a unique role in improving the freight system. This chapter identifies overlap and gaps between current investment plans, and identified needs and issues, and presents an overview of the opportunities present in each of the "4P" categories.

4.1 Summary of Freight System Opportunities

Given the myriad of strengths, weaknesses, opportunities and threats relevant to District 1, how should MnDOT and its local stakeholders leverage their limited resources to improve the freight system? MnDOT and its stakeholders have four types of tools to improve the freight system:

- **Projects** including infrastructure maintenance, improvement, and expansion.
- **Programs** designed to improve information about freight operations in the District.
- **Policies** to govern development and operation of the freight system.
- **Partnerships** with local stakeholders to better understand needs and issues, and implement or advance strategies to improve the system.

Each of these "4 P's" has a different role in improving the system. While projects may appear to be the most important because they produce tangible results, proper selection and funding of specific projects would not be possible with partnerships to gather feedback, policies to guide investment, and established programs to allocate funding.

This Working Paper presents a series of strategic opportunities within each "P" category. Information for each of the categories comes from the analysis of this Working Paper and Working Paper 2, as well as stakeholder feedback, and recommendations from previous studies, including the Manufacturers' Perspectives study.

This slate of preliminary opportunities is conceptual and will be further explored with the Advisory Committee and Technical Team to understand the completeness of opportunities identified. Opportunities may be added to/deleted from this list prior to formalizing freight plan recommendations.

4.2 Projects

4.2.1 Investment Plans: Project Overlap and Gaps

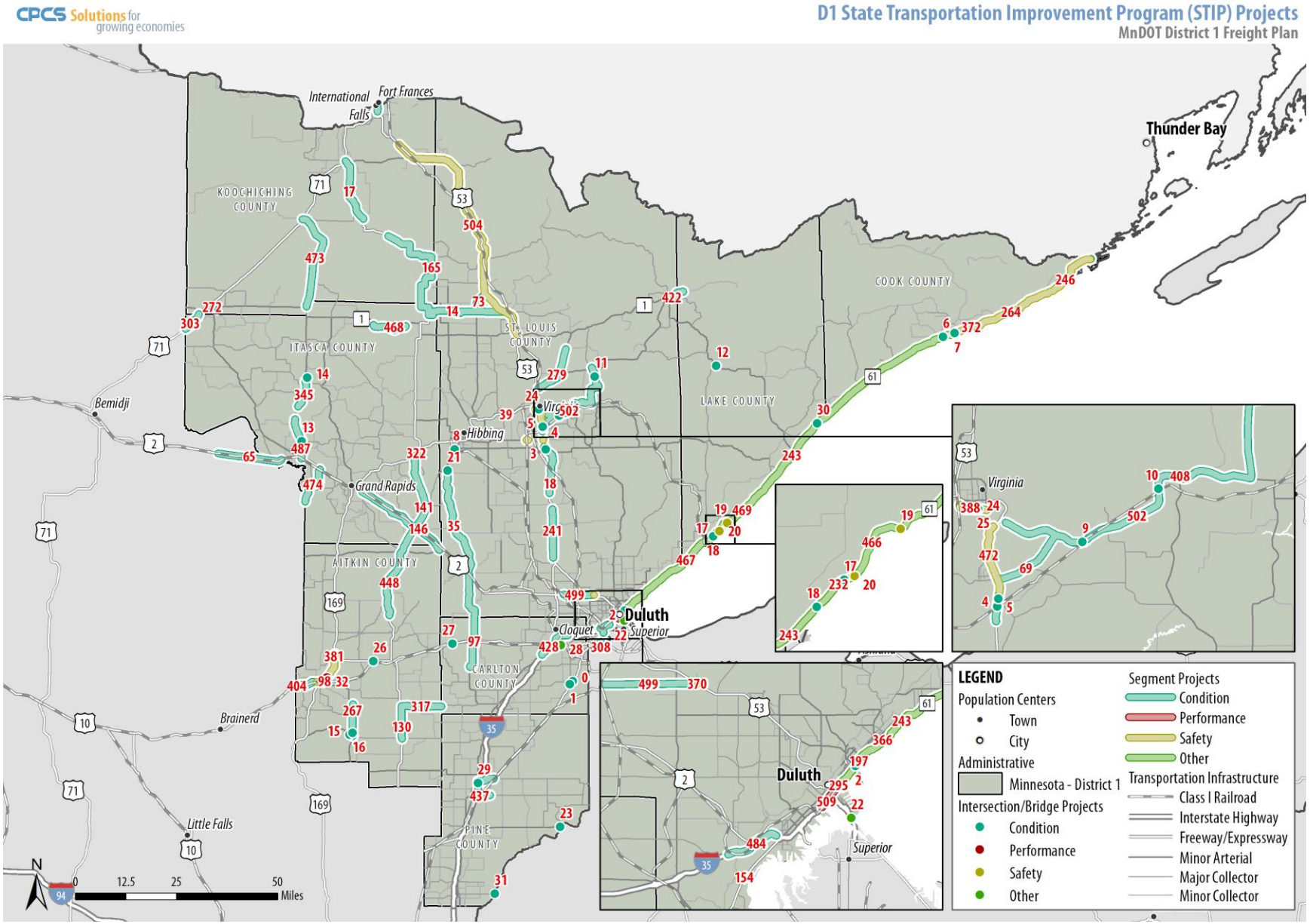
MnDOT, DSMIC, and District 1's counties are responsible for maintaining and upgrading the public assets of the District's freight network, particularly roadways. State- and County-programmed road maintenance projects may overlap with identified needs and issues, and while most or all of these projects may not have a freight-specific focus, they still have the potential to improve the District's freight movements. This section provides an overview of the overlaps and gaps between programmed investments, and identified needs and issues. In turn, insight into these overlaps and gaps will help the District and Counties understand how their projects could affect freight needs and issues, and will aid in the prioritization and selection of up to three projects for advancement to an engineering pre-feasibility assessment.

Information on District 1's programmed projects came from four types of sources:

- MnDOT's **State Transportation Improvement Program** (STIP) identifies a schedule and funding amount for transportation projects for four years. The project list in the STIP includes all state and local projects with federal highway and/or transit funding, as well as state-funded projects. The STIP also contains freight, rail, and port investments, for reference. Figure 4-1 shows the projects listed in the STIP along with the need or issue type that each project is intended to address. The estimated value of these projects is about $572.4 million, a figure that includes the Twin Ports Interchange replacement.
- MnDOT's **Capital Highway Investment Plan** (CHIP) lists 10 years of highway investments on the state highway network. The CHIP includes STIP projects, as well as planned investments for six years after the scope of the 4-year STIP. These longer-term plans are not guaranteed to be constructed, but are listed in the CHIP to aid in coordination and planning. Figure 4-2 shows CHIP projects, which were classified as "condition" projects. The estimated value of District 1's CHIP projects is $825.2 million, which includes the Twin Ports Interchange project.
- The Duluth-Superior Metropolitan Interstate Council's (DSMIC) **Transportation Improvement Plan** (TIP) lists four years of federally-funded projects. Separate TIP documents are prepared for the Minnesota and Wisconsin portions of the DSMIC region. The total value of TIP projects in the Duluth area is $48.3 million.
- **County improvement plans** list four to five years of upcoming road and bridge projects on county-managed road networks. Figure 4-3 shows the DSMIC TIP as well as county improvement plans. As of the time of this writing, only Pine and Aitkin Counties had provided their improvement plans to the project team.

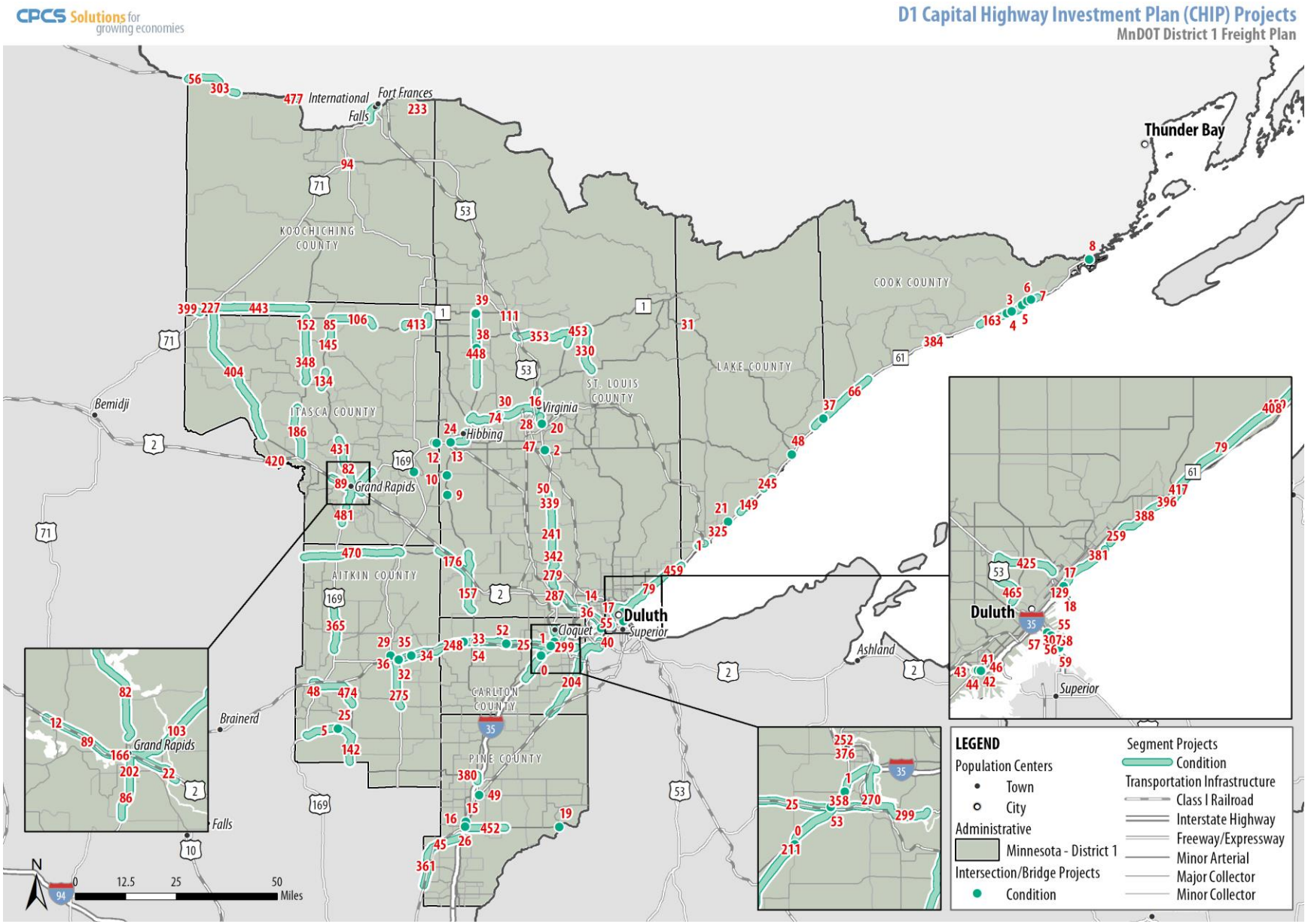
Figure 4-4 shows the locations of STIP, CHIP, TIP, and county projects combined, and Figure 4-5 highlights where there are gaps between listed projects and identified needs and issues. It is important to note that county-level plans were only available for Pine and Aitkin Counties, so some of the gaps in other counties that Figure 4-5 identifies may be addressed by county-level plans. Additional information can be found in **Appendix C** (Project Lists) and **Appendix D** (Potential Gaps to Address.

Figure 4-1: STIP Projects by Project Type



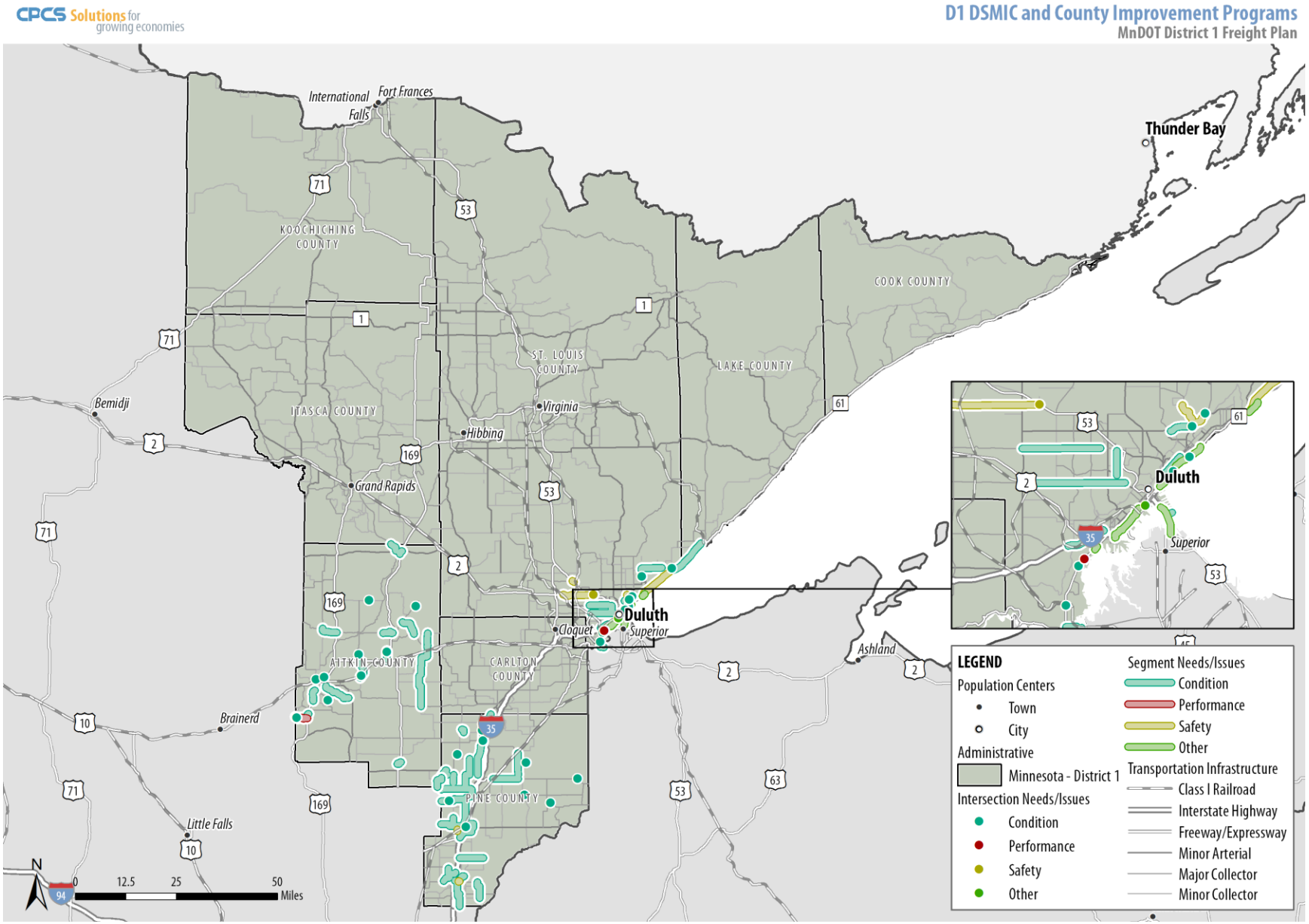
Source: CPCS analysis of MnDOT State Transportation Improvement Plan data. 2019.

Figure 4-2: CHIP Projects



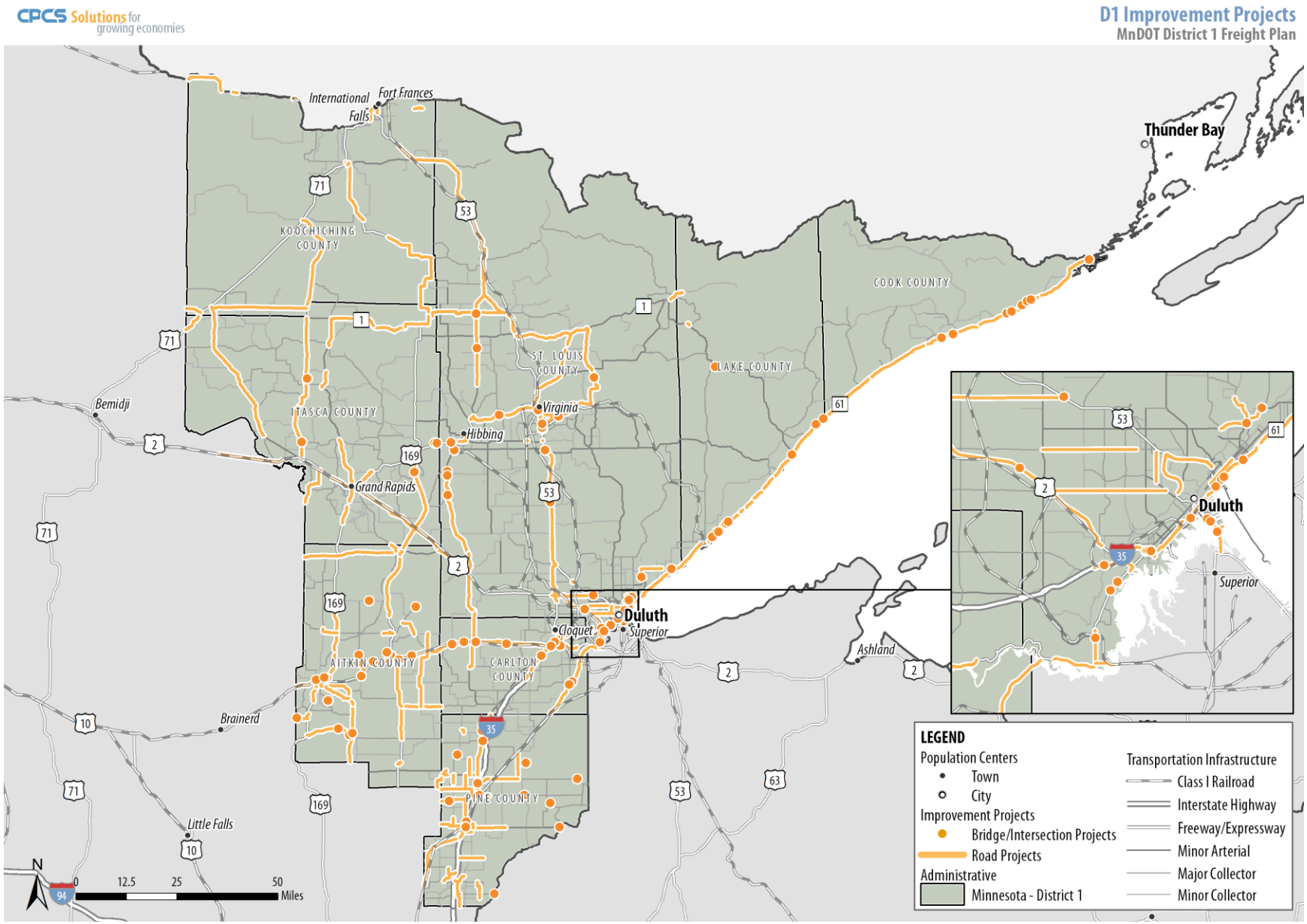
Source: CPCS analysis of MnDOT Capital Highway Investment Plan data. 2019.

Figure 4-3: DSMIC TIP and County Improvement Plans by Type



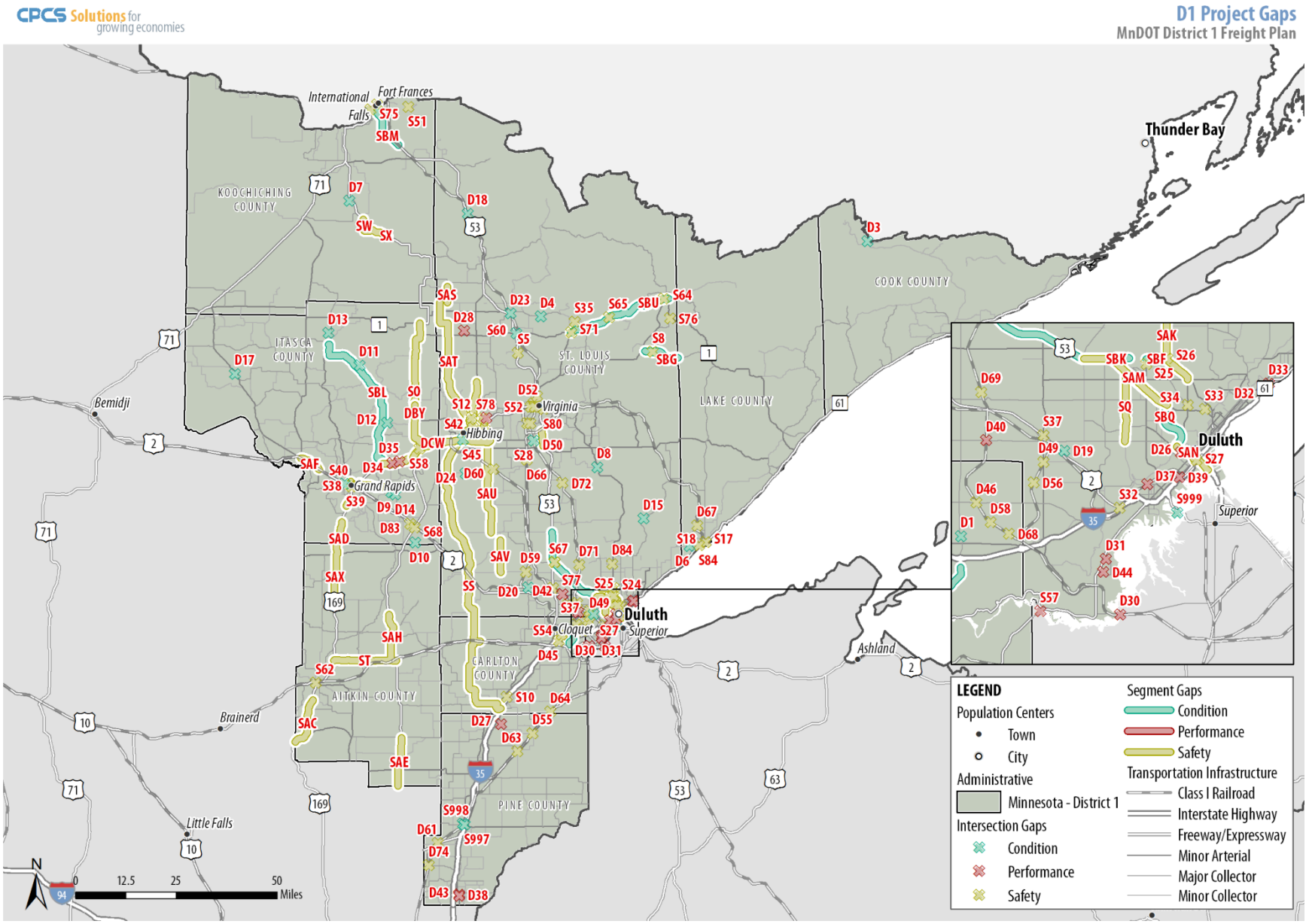
Source: CPCS analysis of DSMIC TIP and County improvement plans. 2019. County improvement plans were received directly from Pine and Aitkin Counties. Information is pending from others.

Figure 4-4: All Planned Projects



Source: CPCS analysis of MnDOT STIP, MnDOT CHIP, DSMIC TIP and County improvement plans. 2019

Figure 4-5: Unaddressed Needs and Issues



Source: CPCS analysis of MnDOT STIP, MnDOT CHIP, DSMIC TIP and County improvement plans against stakeholder and data identified needs. 2019

4.2.2 Projects

As indicated in Section 2.5 – Freight Funding, while the 2018-2037 MnSHIP includes dedicated freight funding for projects, this is available through the FAST Act National Highway Freight Program funds that may not be renewed in future Federal legislation. Going forward, MnDOT will need to examine options for advancing freight-benefitting projects without these dedicated freight funds. One option is to examine freight projects through traditional MnDOT funding program lenses to determine their applicability.

The MnSHIP identified 5 primary investment objectives and 10 investment categories, one of which is freight, as shown in Figure 4-6. In the event the freight investment category is unavailable in the future, the analysis in this Working Paper has identified key links between roadway freight system needs/issues and three primary investment objectives – System Stewardship, Transportation Safety, and Critical Connections. This was done through the targeted condition, safety and mobility analysis presented in Section 2.

As shown in Figure 4-5, notable gaps between programmed projects and needs and issues include:

- **Safety** gaps were the most common gap, making up two-thirds of the identified gaps. These were distributed across almost all areas of the District, but were particularly focused on smaller highways in St. Louis and Itasca Counties, as well as around Duluth. *Note, capital improvement plans for these counties were not available at the time of this writing for screening. Some of these gaps may be eliminated as new information is received.*
- **Performance** related gaps only made up about 12 percent of identified gaps, and all had to do with problems related lack of mobility/maneuverability at low-clearance bridges. These problems were primarily concentrated around the Duluth area.
- **Condition** gaps made up about one-fifth of identified gaps, and included 18 bridges identified as potentially deficient, as well as 15 issues identified by stakeholders or previous plans. Interestingly, few pavement condition gaps were found, which supports feedback from District 1 staff who noted that the District was proactive in programming improvements to address pavement needs.

Appendix D (Potential Gaps to Address) provides a detailed listing of these gaps shown in Figure 4-5. This list will be used as a starting point to begin to conceptualize project recommendations, and have been aligned with potential non-freight-specific funding options in Figure 4-6. It is assumed that these will be the primary funds for roadway related freight projects going forward. Projects on the maritime and railway systems will continue to be funded through MnDOT's funding programs described in Section 2.5.2. Many projects fall into multiple categories, but for simplicity, projects were only assigned to one category in Figure 4-6. Therefore the true number of project types for each investment objective may be higher. For example, some gaps related to a need for traffic lights touch both the Roadside Infrastructure and Traveler Safety categories.

Many types of highway transportation projects are in fact freight-benefitting projects.

Figure 4-6: 2018-2037 MnSHIP Investment Objectives and Categories Aligned with District 1 Freight Needs

Investment Objective	Investment Category	Applicable D1 Freight System Need	Number of Project Types Identified in Gap Analysis
System Stewardship	Pavement Condition	Pavement Condition	11
	Bridge Condition	Bridge Condition	21
	Roadside Infrastructure	• Signage • Traffic Signals/Controls • Other Technology and information management systems	9
	Jurisdictional Transfer	N/A	N/A
	Facilities	Weigh station and commercial vehicle enforcement	1
Transportation Safety	Traveler Safety	• Sustained crash locations • Rail-highway crossings	36
Critical Connections	Twin Cities Mobility	N/A	N/A
	Greater Minnesota Mobility	• Intersections • Passing or Turning Lanes • Corridors • Roundabouts • Redundancies	68
	Freight	***N/A***	***N/A***
	Bicycle Infrastructure	N/A	N/A
	Accessible Pedestrian Infrastructure	N/A	N/A
Healthy Communities	Regional and Community Improvement Priorities	• First and Last-Mile Connections • Truck and HazMat Routing	1
Other	Project Delivery	N/A	N/A
	Small Programs	N/A	N/A

Note: This evaluation assumes that a dedicated freight investment category will not be available in the future.

It is acknowledged that while freight projects could potentially align with MnSHIP funding categories, that this does not mean there will be funding available to advance all projects due to the overall state transportation funding shortfall. However, the information in this Working Paper is intended to be an opening to a broader conversation on freight project funding; specifically that many different types of transportation projects provide freight benefits, and that coordination with freight stakeholders, including MnDOT's Office of Freight and Commercial Vehicle Operations, should be part of statewide investment planning.

4.3 Policies, Programs, and Partnerships

To support the advancement of projects, policies, programs, and partnerships were identified. Generally, policies established to inform project and program investments, and partnerships are required for effective implementation.

4.3.1 Policies

Potential policy opportunities for MnDOT's Office of Freight and Commercial Vehicle Operations and District 1 include:

- Incorporating freight considerations into existing funding programs, or determining the potential freight benefits or impacts of specific CHIP, STIP, TIP, and county projects. Including these considerations may help the District address freight needs and issues without assistance of a dedicated freight funding program.
- Identify, create, or designate super-heavy oversize-overweight corridors, particularly for cargo traveling to or from the Port of Duluth. In particular, general truck and (when relevant) oversize-overweight related needs should be factored into designs for new infrastructure, such as roundabouts.
- Harmonize Minnesota's truck weight policies to more closely match Ontario and Wisconsin's policies, which has the potential to make interstate and international trucking operations more efficient.
- Management of the road network should focus on maintaining good condition of existing assets, rather than expanding capacity of the system. The policy reflects the fact that funding shortfalls are expected in the future, and limiting additional maintenance costs for additional infrastructure is in the states' best interest.

4.3.2 Programs

Potential programs that MnDOT and local stakeholders could implement include:

- Improved incident management systems and collaboration with local first responders to ensure that disruptions to critical routes without redundancies are minimized.
- Update or "refresh" the Manufacturers' Perspectives study on a 5 or 10-year basis, to gather relevant feedback, and evaluate how freight needs and issues are changing over time.

4.3.3 Partnerships

Since MnDOT only has control over a limited portion of the freight network, and has limited resources to support maintenance and improvement, partnership with other public agencies and private stakeholders will be an important element of future work on the freight system. Potential partnership opportunities include:

- Encourage state and federal lawmakers to develop stable funding policies and sources for freight, and the transportation system in general.
- Offer assistance to county and local governments with long-range planning. As noted above, many freight issues occur off of MnDOT's trunk highway network, so collaboration with local governments may be necessary to solve first- and last-mile freight movement needs and issues.

- Collaborate with local economic development agencies to market the region's competitive location and assets: attract new business by emphasizing the presence of four Class I railroads and access to St. Lawrence Seaway as major competitive assets.
- Collaborate with local economic development agencies and (if possible) railroads to explore the potential to expand or improve rail service in communities outside of Duluth.
- Use feedback from Manufacturers' Perspectives study to better understand business needs in District 1, and improve existing planning processes and maintenance programs.
- Engage with federal lawmakers and the US Army Corps of Engineers to advocate for reducing the harbor and channel dredging backlog.
- Continue port land use planning efforts and engagement with the Duluth-Superior Harbor Technical Advisory Committee.
- Engage with neighbor state and provincial transportation agencies to ensure that highways critical to freight in District 1 (US-2, US-53 in Wisconsin) are adequately maintained. Other topics for collaboration include weight limit harmonization, and the creation or preservation of oversize-overweight truck corridors.

5 Conclusions and Next Steps

5.1 Conclusions

District 1's freight system has a variety of needs and issues, most of which are focused on the road network. In particular, roadway safety and improvements such as passing lanes and harder or wider shoulders will be key to making the system efficient for both trucks and passenger vehicles. Congestion is not a problem in the District, and relatively common mobility concerns related to weight limits and bridge clearances for large trucks. In terms of system condition, pavements do have issues but analysis found that all will be addressed as part of future capital plans.

This Working Paper reinforced that a foundational strength of District 1 is its multimodal assets and their connections to North American markets. However, a foundational weakness is the need to maintain these assets in the face of uncertain funding sources or levels.

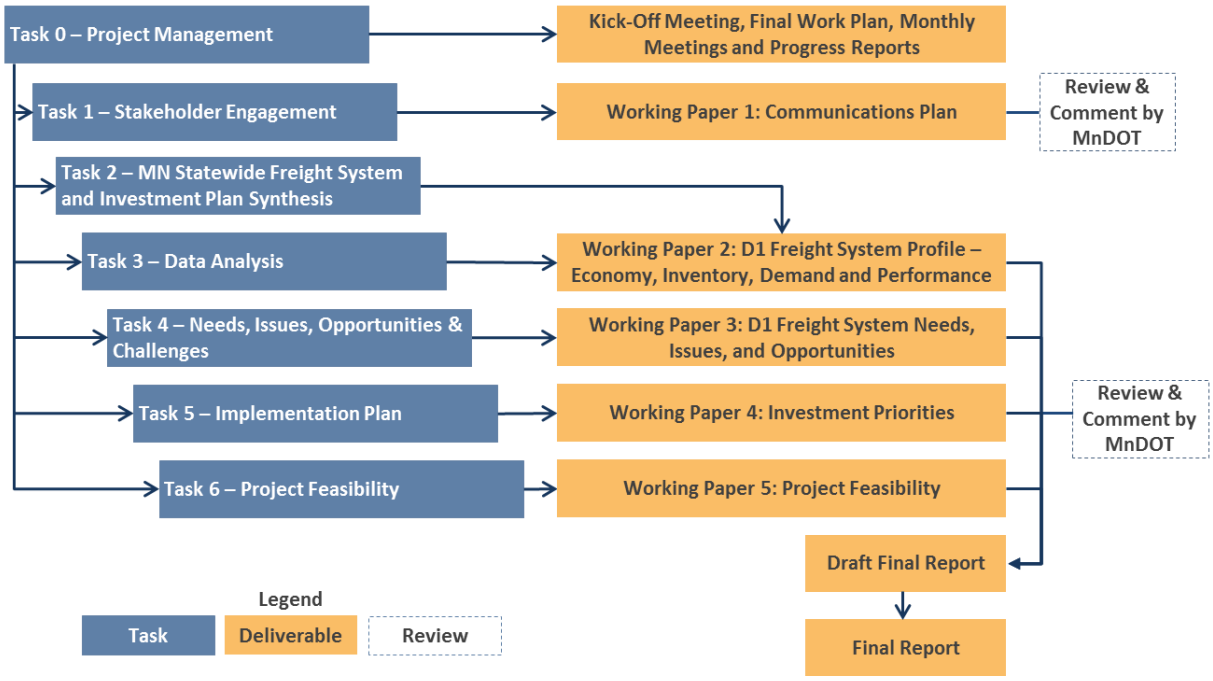
A top need for Minnesota is reliable and flexible funding that can be used toward freight projects.

While the MnSHIP currently includes dedicated freight funding for roadway projects, this is short-term funding through 2022, and may not be renewed as part of Federal legislation.

5.2 Next Steps

As shown in the following figure, this Working Paper represents the output of Task 4 and outlines an initial slate of project, program, policy and partnership opportunities to be considered by MnDOT and its stakeholders. The opportunities presented in this Working Paper will be advanced to Task 5 for quantitative evaluation, as well as up to 3 project opportunities will be advanced to Task 6 for feasibility and order-of-magnitude cost determination. Tasks 5 and Task 6 will be key to ensuring the District 1 Freight Plan is realistic and implementation focused.

Figure 5-1: Project Approach



Appendix A – Stakeholder-Identified Needs and Issues

This appendix contains a list of the location-specific stakeholder needs and issues identified through consultations, Advisory Committee and Technical Team feedback, and the District Manufacturers' Perspectives study. The fields in the table below are:

- **ID:** This code refers to the need/issue ID printed on maps in this Working Paper.
- **Source:** the source of the comment. The primary source is "D1 Action Items," which were identified as part of the Manufacturers' Perspectives study.
- **Type:** Intersection or Segment of highway.
- **Highway** Name or Number
- **Need/Issue Type:** this field corresponds to the primary need or issue associated with the location. Needs and issues were coded in one of four ways: safety, condition, performance, or other.
- **Additional Information:** where available, additional details from the stakeholder were noted here.

Figure A-1: Stakeholder Identified Needs and Issues

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
S1	D1 Action Items	Intersection	169, 47	TH 169 at 390th Ave.	Safety	The distance between the railroad and TH 169 forces cars turning left or right to cue on the highway when a train in crossing. A right turn lane and bypass lane should be considered for driver safety.
S2	D1 Action Items	Intersection		9th St. N and 9th Ave N. Virginia	Performance	Difficult to make left turn
S3	D1 Action Items	Intersection	22/HWY 53	Angora	Safety	County Road 22 is not a good intersection. I come to work and see car parts all over and it is a long trip for an ambulance to respond.
S4	D1 Action Items	Intersection	TH 169 intersection	at 37th Avenue	Other	The sunshine makes it look like the light is green.
S5	D1 Action Items	Intersection	53	At business location (mile post 82.434)	Safety	Wants median crossover on TH 53 at his driveway
S6	D1 Action Items	Intersection	53	at Midway Road	Performance	A longer turn lane is needed for SB Hwy. 53 to Midway Road.
S7	D1 Action Items	Intersection	37	at the Cherry Store and school (South on Cty Rd 25)	Performance	Need bypass lane on TH 37 at the Cherry Store and school. South on CR 25 – there was a fatality this fall. Impact to business: School buses are turning in.
S8	D1 Action Items	Intersection	Co. Rd 70 & Scott Road	Babbitt	Safety	Finding Black Iron was difficult for interviewers and the owner said trucking companies have a hard time finding it, too. When pavement ends on Co Rd 70, there is no signage to indicate that you are still on Co. Rd. 70, or whether Scott Road is ahead. Scott Road isn't labeled so you only know from the Black Iron Rubber business sign at the end of the road to turn (but this is after North Shore Mining and many people turn around before getting there).
S9	D1 Action Items	Intersection	N/A	Blatnik Bridge	Other	wishes MnDOT would have a sidewalk on the Blatnik Bridge
S10	D1 Action Items	Intersection	1-35	Bridge 09823 1-35 over Moose Horn River at Milepost 219.556	Safety	Requirements to occupy the center of two lanes and max speed of 10 mph on this bridge. He thinks it is dangerous to have high speed difference between permit restriction and posted speed limit.
S11	D1 Action Items	Intersection		Bridge Tavern to	Condition	Bridge Tavern to 22 is bad, and that's a shortcut for a

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
				22		lot of drivers. Maybe it was never designed for big trucks, but it needs to be rebuilt.
S12	D1 Action Items	Intersection	Iron World Road and 169	Chisholm	Safety	You've got people pulling out of Iron World (actually called MN Discovery Center) or coming from McDonalds, onto 169 or crossing 169 to get across, and they can't see the cars coming from west because there's a hill and a curve. My son got into an accident there years ago. You're coming from Hibbing, coming up the hill and they don't see you as they try to cross the street or turn onto 169. I don't know if that intersection should even be there. I ride a motorcycle, and as I go on 169 that's the worst area, I don't know if people pulling onto 169 see me coming. The people coming on 169 have the right of way, they shouldn't have to worry about people pulling out in front of them. A fix? Eliminate the intersection. Poor sight distance at this intersection
S13	D1 Action Items	Intersection	At Washington Av. and Co rd 45	Cloquet	Other	Problems with intersection.
S14	D1 Action Items	Intersection	Hwy 45 at I35	Cloquet	Performance	Traffic congestion pulling out or turning _
S15	D1 Action Items	Intersection	Hwy 2/Cty Road 63	Corner of Hwy 2 and Cty Road 63	Condition	Washout of shoulder aggregate on corner of Highway 2 and Cty Rd. 63
S16	D1 Action Items	Intersection	CR 41	CR 41/Pacific Street NW	Safety	"Trucks Hauling" signs would be great in the vicinity of the business. Business location sign or "truck entrance/truck entrance in XXXX feet. Reason(s): GPS units bring deliveries in off 7th Avenue NW. This road brings you through the sports complex and practice fields. Many pedestrians walking and parking on the road create VERY unsafe situations. They would prefer to have the trucks enter via CR 41/Pacific Street Northwest.
S17	D1 Action Items	Intersection	2	Cty 2	Safety	Concerns with heavy traffic coming from north and cars going South waiting to turn left on Cty 2. Cars go around on the right to get by - sometimes very fast. Could use a bypass lane at this location (right in front of Stanley offices). Also, safety concern about crossing cty Rd. 2 by employees and forklifts. (Not

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
						sure what the problem is with crossing, though?)
S18	D1 Action Items	Intersection	61 and 2	Cty 2 and Hwy 61 intersection	Safety	Difficult to navigate Cty 2 and State Hwy 61 intersection with a semi truck. Left turn signal and turn lane from NB 61 to Lake Cty 2 would be nice. Intersection is one of the worst in town. Large delays and congestion, traffic tries to sneak around - risk of accidents. Foot traffic is also present. ("T-bone central")
S19	D1 Action Items	Intersection	47; Cty Rd 12	Downtown Aitkin	Performance	What about changing the truck route from 47 onto County Road 12, which goes to 12 and would create a natural bypass that avoids downtown. The intersection in town is not wide enough for semi-traffic.
S20	D1 Action Items	Intersection	5th Ave W and Railroad St	Duluth	Safety	The area around 5th ave west and railroad street needs better signage, railroad signs.
S21	D1 Action Items	Intersection	Midway Road at Highway 2 going north.	Duluth	Performance	Would like acceleration lanes to give drivers a safer speed before merging.
S22	D1 Action Items	Intersection	Highway 53 where it intersects with Pike Lake/13, northwest of Duluth.	Duluth	Performance	Would like acceleration lanes to give drivers a safer speed before merging.
S23	D1 Action Items	Intersection	I35/Central Ave	Duluth	Safety	On Central in Duluth, trucks have a hard time at the Super One intersection. We have to get off on central and turn left, so a signalized intersection would be a great help.
S24	D1 Action Items	Intersection	Martin Road & Rice Lake Rd	Duluth	Safety	With what seems to be an ever-increasing amount of traffic the intersection of Rice Lake Rd. and Martin Rd, at the peak times of the day, traffic backs up causing delays for truck traffic to get to our facility. In some cases if weather is involved we have had delays of up to 40 minutes or more to get trucks to our location.
S25	D1 Action Items	Intersection	Airpark Blvd	Duluth	Safety	Getting onto Haines Rd from Airpark Blvd. Trucks often have to “gun it” to get onto Haines. There are

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
						frequent accidents at that intersection.
S26	D1 Action Items	Intersection	Airpark rd. and rice lake rd.	Duluth	Safety	Airpark rd. and rice lake rd. intersection is an issue… uncontrolled. Temporary stoplight would be beneficial. Manage the detour better.
S27	D1 Action Items	Intersection	I35 and 535	Duluth	Safety	I35 to 535 in Duluth –53 is going downhill and merges. It's a tricky spot and hard to tell who has the right of way. In a truck it's hard to see the traffic, and neither way has a yield sign.
S28	D1 Action Items	Intersection	Highway 37	Duluth	Condition	Hwy 37 railroad crossing large hump cars and trucks can bottom out
S29	D1 Action Items	Intersection	MN61 and London Rd / I-35 Junction	Duluth	Performance	This is an area of extreme congestion during peak hours, making it difficult to make light cycles. The traffic flow becomes a bottleneck as these roadways converge. This area is difficult to navigate and driver have concerns with quick stops and slowdowns at this location. Are there any plans for reconstruction
S30	D1 Action Items	Intersection	I-35/44th Street	Duluth	Performance	Congestion levels around 44th St, Cody St, and Central Ave.
S31	D1 Action Items	Intersection	I-35/Cody Street	Duluth	Performance	Congestion levels around 44th St, Cody St, and Central Ave.
S32	D1 Action Items	Intersection	I35/Proctor exit	Duluth	Safety	However, the truck lane on I35 SB drops off as an exit for Proctor. Trucks then have to make last-minute lane shift if staying on I35. Sometimes is not safe.
S33	D1 Action Items	Intersection	Pecan Avenue	Duluth	Safety	The bus stops are on both sides, people stand in center of the road. We need another turn lane and another pedestrian crossing.
S34	D1 Action Items	Intersection	Arlington Street	Duluth	Safety	The bus stops are on both sides, people stand in center of the road. We need another turn lane and another pedestrian crossing.
S35	D1 Action Items	Intersection	169	Fortune Bay Resort Casino	Safety	Very congested near casino and many crashes. He suggested either a new intersection or reduced speeds of 30 to 40 MPH in the area.
S36	D1 Action Items	Intersection		Garfield Ave and Superior St.	Other	Bus stop not very close, but business says there is no reason to move it if it's just for his two employees
S37	D1 Action Items	Intersection	Highway 2.	Going downhill into	Safety	Would like advance warning signs for traffic lights going downhill into Adolph on Highway 2. Safer for drivers who know when to stop.

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
S38	D1 Action Items	Intersection	TH 2/2nd Ave NW	Grand Rapids	Safety	In 2008 MnDOT removed the signal at this intersection when th 2 was redone. Sometimes trucks accidentally go that way when leaving blandin, and they can't get out into traffic.
S39	D1 Action Items	Intersection	TH 169/River Road	Grand Rapids	Safety	Signal was removed in 2012 when MnDOT reconstructed 169. Now there is a pedestrian crossing flashing sign. It doesn't work well – drivers don't stop for it. Also, since there isn't a signal there anymore, anybody leaving Bladin's headquarters building now takes back-roads down to 4th St S where a new signal is located, and enter Th 169 there. Not good.
S40	D1 Action Items	Intersection	Highway 2	Grand Rapids	Safety	They may have already put one there, but going west into town (Grand Rapids) on 2, the last stop on 63 – flasher would be helpful when coming out of the speed limit zone.
S41	D1 Action Items	Intersection	Highway 169 &2	Grand Rapids	Performance	Only on Friday at 4:00 when the train comes through (has to do with tourist traffic too). It's busy. Finding areas with uncontrolled intersection and take a left, like going south on Pokegama when 169 turns south. Forget it. You'll be there for a while. Sometimes I take the back way to avoid it. 2 and 169 are very busy and untimed lights creates huge backups.
S42	D1 Action Items	Intersection	169	Hibbing	Safety	Mitchell Bridge (US 169, just east of Hibbing) – it's on a curve, sloped and curved, icy conditions can be dangerous.
S43	D1 Action Items	Intersection	169	Hibbing	Other	Water/ice buildup on 169 bridge in Hibbing. Lots of overpasses get slippery. US-169 in Hibbing, the melting and thawing at the low spot on US-169 under the First Ave bridge overpass. Water collects, no place for it to go.
S44	D1 Action Items	Intersection	TH169 and County Road 92 intersection	Hibbing	Safety	TH169 and County Road 92 intersection could use warning system like Hat Trick Avenue on TH 53 in Eveleth.
S45	D1 Action Items	Intersection	41st St	Hibbing	Condition	Parking lot to 41st (frontage road) gets icy in the winter-can slip right out into road
S46	D1 Action Items	Intersection	Highway 5	Hibbing	Safety	Need a Trucks Hauling or entering sign on Hwy 5

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
						within half mile of both sides of facility for entry.
S47	D1 Action Items	Intersection	48	Hinckley	Condition	Hwy 48 tight right turn to Morris Avenue.
S48	D1 Action Items	Intersection	48	Hinckley	Condition	Another minor problem. Standing water and potholes at the turn into the casino. Who owns that? Maybe lengthen the length of the turn lane. In winter standing water freezes and cars slide and knock over the light pole.
S49	D1 Action Items	Intersection	53	In Virginia	Safety	Traffic lights need warning flashers
S50	D1 Action Items	Intersection	Ranier Bridge	International Falls	Other	Is critical to have a snowmobile lane on the Ranier overpass bridge- there is no other way to cross the Canadian National Rail Road. It has a huge impact on winter tourism
S51	D1 Action Items	Intersection	Tilson Creek on Hwy.11	International Falls	Safety	Tilson Creek boat landing; it is posted at 40mph, but it should be 30 mph with flashers.
S52	D1 Action Items	Intersection	7 and 53	Intersections near Walmart (Hwy 7 and 53)	Safety	Intersections are congested (typically between 7-9:30 am, noon and 3-6:00 pm, and during shift changes at MnTAK). He thinks an intersection like the one on Arrowhead Road and Hwy 53 in Duluth might be better in these areas.
S53	D1 Action Items	Intersection	7 and 53	Intersections near Walmart (Hwy 169 and Mud Lake Road)	Safety	Intersections are congested (typically between 7-9:30 am, noon and 3-6:00 pm, and during shift changes at MnTAK). He thinks an intersection like the one on Arrowhead Road and Hwy 53 in Duluth might be better in these areas.
S54	D1 Action Items	Intersection	45	Kwik Trip in Cloquet	Safety	People coming from Carlton are turning into Kwik Trip, while other people are coming off the freeway to go to Holiday. There is only 12' for people to cross over. Additionally, there are semi shipments in and out of Kwik Trip. There is heavy traffic in this location even before the AM peak (5 AM).
S55	D1 Action Items	Intersection	Highway 2	La Prairie	Performance	In the past they had heard about some truckers having issues with the Th 2/BNSF bridge at the prairie river (in Laprairie). Sounded like trucks had to lower equipment at times to get under RR bridge.
S56	D1 Action Items	Intersection	MinnTAC location	Mountain Iron	Other	New entrance to MnnTAC in Mountain Iron is not signed well on County Road. Don't know where allowed to go. Behind the L&N. It's a local issue.

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
S57	D1 Action Items	Intersection	TH 23	Munger Trail Bridge	Performance	TH 23 is tough for permitting when delivering to Duquette or Kerrick due to bridge restrictions. Munger Trail bridge = low clearance
S58	D1 Action Items	Intersection	169	Nashwauk	Safety	US-169 bridge near Nashwauk – seeing a lot of accidents. Always 4-5 cars involved. Is it the maintenance, the de-icing process? MN-65 and US-169, west entrance into Nashwauk. Once you're in the center median and want to go across, usually involves the left lane. Somebody coming from west, wants to make a left turn into Nashwauk, and colliding with someone going west on 169
S59	D1 Action Items	Intersection	53 Southbound	North of 169, Virginia	Safety	Minntac closed an entrance causing backups on 53 to west 169 There are about 350 people coming and leaving at the 3:00 pm shift. It might be helpful to have a left turning lane for traffic coming from the north.
S60	D1 Action Items	Intersection	53	North of TH1 near KGM Contractors	Condition	Large bump; It would be helpful if it could be fixed
S61	D1 Action Items	Intersection	694/494	Oakdale Interchange	Performance	The design of interchange has long outgrown its capacity and is a dangerous location in the metro. Common location for bottlenecks and extreme congestion. Creates delays and problems for semi drivers so much that they will exit the interstate system to find alternate local roadways in populated areas just to avoid the delays caused at this interchange
S62	D1 Action Items	Intersection	169, 47	On TH 169 SB movement onto TH 47.	Safety	Should have a bypass lane. Possible location for a round-about?
S63	D1 Action Items	Intersection	1-35, 45	On-off ramp at 45 and 1-35 (45 to 35S or 35N to 45)	Safety	This is a dangerous location. It is too short to get up to speed, especially for trucks and trailers. It is also difficult for large vehicles to get on and off of the ramp. It is a safety concern for the company, but there is no better alternate route for their trucks.
S64	D1 Action Items	Intersection	21	Sheridon St and Central	Safety	The signal at Sheridan and Central should be a simple fix. If you're a block away from it the locals know they aren't going to get through. Just change the timing.

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
S65	D1 Action Items	Intersection	169	Six Mile Road	Safety	The school bus from Tower turns into Six Mile Road, then backs out onto Hwy. 169 to turn around. At the same time, the bus from Ely is returning. It is just a matter of time before they hit each other...The Six Mile Lake road BUS backing. Build a turn-around for the bus.
S66	D1 Action Items	Intersection	Garfield Ave	Superior	Performance	The roundabout just outside our entrance: people don't know how to drive on those. We have 70 foot trailers, so we go through those nicely planted flowers on it, or up on the sidewalk.
S67	D1 Action Items	Intersection		Swan Lake Road Bridge	Safety	Width of bridge too narrow and only one car can get through at a time causing shipping delays.
S68	D1 Action Items	Intersection	Highway 2 & 65	Swan River	Safety	There's a problem area at 2 and 65 in Swan River. There are a lot of terrible accidents there.
S69	D1 Action Items	Intersection	TH194	TH 194 (Mesaba Ave) at 1st street in Duluth	Other	wishes MnDOT would improve cross-walk
S70	D1 Action Items	Intersection	65, 201	TH 210 and TH 65 Intersection in McGregor	Safety	There used to be signals at this location and now it is a 4-way stop. Replacing signals here would help reduce confusion and address safety concerns.
S71	D1 Action Items	Intersection	169/1/CR77	Tower	Safety	1) Verify intersection approach signing to reduce confusion for drivers 2) Verify sight distance for drivers trying to enter 169
S72	D1 Action Items	Intersection	61	Train bridge on 61 in Two Harbors (on 7th by Super One)	Performance	Most trucks bypass on Cty 26.
S73	D1 Action Items	Intersection	HWY 53	Virginia	Safety	S.B. 53 entrance should have a left turn lane for entering traffic and an acceleration lane for heavy loads leaving facility. During Mittal shift change, many Mittal employees use the P and H road to access highway 53. It is very busy at 3:30. "Daytona"
S74	D1 Manufacturing Study	Intersection	HWY 5/HWY 169	Hibbing	Safety	Businesses suggested this location might benefit from an acceleration lane
S75	D1 Manufacturing	Intersection	HWY 71/KEENAN DR.	INTERNATIONAL FALLS	Safety	Timing of certain signals are not ideal for traffic flow

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
	Study					
S76	D1 Manufacturing Study	Intersection	HWY 1/HWY 120	ELY	Safety	Respondents recommended turn lanes
S77	D1 Manufacturing Study	Intersection	HWY 2	SAGINAW	Performance	Bridge on Highway 2 between Highway 194 and Highway 33 in Saginaw is narrow and has low clearance
S78	D1 Manufacturing Study	Intersection	HWY 169	BUHL	Performance	Sherman Overpass west of Buhl on Highway 169 has low clearance
S79	D1 Manufacturing Study	Intersection	HWY 53/HWY 37	VIRGINIA	Performance	Due to low clearance, Highway 53 at Highway 37 south of Virginia bridge is scheduled for replacement in 2018)
S80	Stakeholder Consultation	Intersection	HWY 53/LANDFILL ROAD	VIRGINIA	Safety	New intersection has trucks blocking traffic.
S81	Stakeholder Consultation	Intersection	34TH AVE/JENSWOLD ST	DULUTH	Performance	Over height and length have issues with grades at old RR Bridge over Jenswold Street by Wade Stadium.
S82	Stakeholder Consultation	Intersection	PIEDMONT AVE/1ST ST	DULUTH	Performance	Over height and length have issues with grades at Piedmont Ave / 1st Street intersection.
S83	Stakeholder Consultation	Intersection		HINCKLEY	Performance	Congestion in Hinckley due to rail traffic and switching, blocks traffic for 20+ minutes at a time.
S84	Stakeholder Consultation	Intersection		TWO HARBORS	Safety	Scenic Hwy 61 and CN RR crossing north of Sonju Ford (south of Two Harbors) still lacks safety arms and this is a big hazard.
S85	Stakeholder Consultation	Intersection		VIRGINIA	Performance	Rail to Truck for Joy Global
S86	Stakeholder Consultation	Intersection	Highway 210	Carlton County Industrial Park	Performance	Rail crossings needed at Carlton County industrial park in order to provide road access to isolated parcels.
S997	Stakeholder Consultation	Rail Bridge	BNSF Bridges on Hinckley Subdivision	Hinckley	Condition	The BNSF line from Duluth to the Twin Cities has four single track bridges that need replacement. The cost to replace these bridges was estimated at $25 million.
S998	Stakeholder Consultation	Rail Bridge	BNSF Bridges on Hinckley	Hinckley	Condition	The BNSF line from Duluth to the Twin Cities has four single track bridges that need replacement. The cost

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
			Subdivision			to replace these bridges was estimated at $25 million.
S999	Stakeholder Consultation	Rail Bridge	Grassy Point Bridge	Duluth	Condition	The Grassy Point Bridge between Duluth and Superior was built in 1912, and may need to be replaced in the future. A proposed replacement that could provide faster service between Superior and Duluth was estimated to cost $51 million.
SA	Stakeholder Consultation	Segment		DULUTH	Performance	Tight railroad curves near Duluth make moving large shipments (i.e. windmill components) challenging
SB	Stakeholder Consultation	Segment		DULUTH	Performance	Tight railroad curves near Duluth make moving large shipments (i.e. windmill components) challenging
SC	Stakeholder Consultation	Segment		DULUTH	Performance	Tight railroad curves near Duluth make moving large shipments (i.e. windmill components) challenging
SD	Stakeholder Consultation	Segment		DULUTH	Performance	Tight railroad curves near Duluth make moving large shipments (i.e. windmill components) challenging
SE	Stakeholder Consultation	Segment		DULUTH	Performance	Tight railroad curves near Duluth make moving large shipments (i.e. windmill components) challenging
SO	D1 Action Items	Segment	State Highway 65	Calumet (Heading North)	Safety	Safety, Shoulders, Passing Lanes
SP	D1 Action Items	Segment	US Highway 169	Aitkin to Hill City	Safety	Safety, Shoulders, Passing Lanes
SQ	D1 Action Items	Segment	Stebner Rd	DULUTH	Safety	Infrastructure, Safety
SR	D1 Action Items	Segment	State Highway 6	Deer River to Big Falls	Safety	Safety, Shoulders, Passing Lanes
SS	D1 Action Items	Segment	State Highway 73	Entire Highway	Safety	Safety, Shoulders
ST	D1 Action Items	Segment	State Highway 210	Aitkin to Cloquet	Safety	Shoulders
SU	D1 Action Items	Segment	County Highway 21	Grand Rapids	Safety	Infrastructure/Safety
SV	D1 Action Items	Segment	US Highway 169	Hibbing to Virginia	Safety	Infrastructure, Maintenance, Safety
SW	D1 Action Items	Segment	State Highway 65	Bois Forte Reservation to Little Fork	Safety	Safety, Shoulders, Passing Lanes
SX	D1 Action Items	Segment	State Highway 65	Bois Forte Reservation	Safety	Communication, Safety, Shoulders, Passing Lanes

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
SY	D1 Action Items	Segment	State Highway 61	TWO HARBORS	Safety	Safety, Maintenance
SZ	D1 Action Items	Segment	State Highway 65	McGregor	Safety	Safety, Shoulders, Turn Lanes
SAA	D1 Action Items	Segment	State Highway 210	Aitkin	Safety	Safety, Shoulders
SAB	D1 Action Items	Segment	State Highway 210	Aitkin	Safety	Safety, Shoulders
SAC	D1 Action Items	Segment	US Highway 169	Aitkin (Heading South)	Safety	Safety, Shoulders
SAD	D1 Action Items	Segment	US Highway 169	Grand Rapids (Heading South)	Safety	Safety, Shoulders
SAE	D1 Action Items	Segment	State Highway 65	McGregor (Heading South)	Safety	Safety, Shoulders
SAF	D1 Action Items	Segment	State Highway 6	Deer Lake	Safety	Safety, Shoulders
SAG	D1 Action Items	Segment	US Highway 169	North of Grand Rapids	Safety	Infrastructure
SAH	D1 Action Items	Segment	State Highway 65	Calumet to McGregor	Safety	Safety, Shoulders, Passing Lanes, Maintenance
SAI	D1 Action Items	Segment	State Highway 38	Big Fork	Safety	Infrastructure, Safety
SAJ	D1 Action Items	Segment	State Highway 38	Big Fork	Safety	Maintenance, Safety
SAK	D1 Action Items	Segment	Rice Lake Rd	Duluth	Safety	Infrastructure, Safety
SAL	D1 Action Items	Segment	Caribou Lake Rd	DULUTH	Safety	Infrastructure, Safety
SAM	D1 Action Items	Segment	State Highway 194	DULUTH	Safety	Infrastructure, Safety
SAN	D1 Action Items	Segment	US Highway 53	DULUTH	Safety	Infrastructure, Maintenance, Safety
SAO	D1 Action Items	Segment	State Highway 38	Grand Rapids	Safety	Safety
SAP	D1 Action Items	Segment	State Highway 37	Hibbing	Safety	Infrastructure, Safety
SAQ	D1 Action Items	Segment	Interstate Highway 35	Cloquet	Safety	Infrastructure
SAR	D1 Action Items	Segment	State Highway 2	Grand Rapids	Safety	Safety
SAS	D1 Action Items	Segment	County	Meadow Brook	Safety	Infrastructure, Safety

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
			Highway 5			
SAT	D1 Action Items	Segment	County Highway 5	Hibbing (Heading North)	Safety	Infrastructure, Safety
SAU	D1 Action Items	Segment	County Highway 5	Hibbing (Heading South)	Safety	Infrastructure, Safety
SAV	D1 Action Items	Segment	County Highway 5	Meadowlands	Safety	Infrastructure, Safety
SAW	D1 Action Items	Segment	County Highway 5	Hibbing	Safety	Infrastructure, Safety
SAX	D1 Action Items	Segment	US Highway 169	Hill City	Safety	Safety, Shoulders, Passing Lanes
SAY	D1 Action Items	Segment	National Forest Hwy 15	TWO HARBORS	Performance	Congestion
SAZ	D1 Action Items	Segment	State Highway 33	Cloquet	Performance	Infrastructure, Lack of Bypass Results in Congestion
SBA	D1 Action Items	Segment	State Highway 48	HINCKLEY	Performance	Infrastructure (Bottleneck)
SBB	D1 Action Items	Segment	County Highway 3	TWO HARBORS	Performance	Infrastructure, Lack of Turn Lanes Results in Congestion
SBC	D1 Action Items	Segment	State Highway 61	TWO HARBORS	Performance	Infrastructure, Lack of Turn Lanes Results in Congestion
SBD	D1 Action Items	Segment	Cloquet Ave	Cloquet	Performance	Infrastructure (Bottleneck)
SBE	D1 Action Items	Segment	Cloquet AVE	Cloquet	Performance	Infrastructure (Bottleneck)
SBF	D1 Action Items	Segment	Airport RD	DULUTH	Condition	Maintenance
SBG	D1 Action Items	Segment	County Highway 70	ELY	Condition	Maintenance
SBH	D1 Action Items	Segment	State Highway 61	Two Harbors to Grand Marais	Condition	Maintenance
SBI	D1 Action Items	Segment		Virginia	Condition	Infrastructure, Maintenance
SBJ	D1 Action Items	Segment		Virginia	Condition	Infrastructure, Maintenance
SBK	D1 Action Items	Segment	Airport Rd	DULUTH	Condition	Maintenance
SBL	D1 Action Items	Segment	County Highway 7	Taconite to Big Fork	Condition	Maintenance
SBM	D1 Action Items	Segment	US Highway 53	Orr to International Falls	Condition	Maintenance
SBN	D1 Action Items	Segment	State Highway 1	Big Fork to Cook	Condition	Infrastructure, Maintenance
SBO	D1 Action Items	Segment	Bayview Dr	TWO HARBORS	Condition	Maintenance

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
SBP	D1 Action Items	Segment	State Highway 169	Virginia to Tower	Condition	Infrastructure, Maintenance
SBQ	D1 Action Items	Segment	US Highway 53	DULUTH	Condition	Maintenance
SBR	D1 Action Items	Segment	US Highway 53	Virginia	Condition	Maintenance
SBS	D1 Action Items	Segment	US Highway 53	Virginia	Condition	Maintenance
SBT	D1 Action Items	Segment	State Highway 2	DULUTH	Condition	Maintenance
SBU	D1 Action Items	Segment	State Highway 1	Tower to Ely	Condition	Maintenance
SBV	D1 Action Items	Segment	US Highway 53	Virginia	Condition	Maintenance
SBW	D1 Action Items	Segment	US Highway 169	Hibbing	Condition	Infrastructure, Maintenance
SBX	D1 Action Items	Segment	Thompson Rd	Cloquet	Condition	Maintenance
SBY	D1 Action Items	Segment	US Highway 53	Canyon to Cotton	Condition	Maintenance

Appendix B – Data-Identified Needs and Issues

This appendix contains a list of the location-specific needs and issues identified through analysis of data provided by MnDOT. The fields in the table below are:

- **ID:** This code refers to the need/issue ID printed on maps in this Working Paper.
- **Source:** the data source used to identify the need or issue.
- **Type:** Intersection or Segment of highway.
- **Highway** Name or Number
- **Need/Issue Type:** this field corresponds to the primary need or issue associated with the location. Needs and issues were coded in one of four ways: safety, condition, performance, or other.
- **Additional Information:** where available, additional details on why the segment or intersection was identified as having a need or issue.

Figure B-1: Data Identified Needs and Issues

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
D1	D1 Bridge Clearance/Condition Data	Intersection	CSAH 1	Cloquet	Condition	Bridge Condition Rating is <50%
D2	D1 Bridge Clearance/Condition Data	Intersection	CNTY 69	Hovland	Condition	Bridge Condition Rating is <50%
D3	D1 Bridge Clearance/Condition Data	Intersection	CNTY 46	Grand Marais	Condition	Bridge Condition Rating is <50%
D4	D1 Bridge Clearance/Condition Data	Intersection	UT 8110	Cook	Condition	Bridge Condition Rating is <50%
D5	D1 Bridge Clearance/Condition Data	Intersection	CSAH 61	Two Harbors	Condition	Bridge Condition Rating is <50%
D6	D1 Bridge Clearance/Condition Data	Intersection	STANLEY RD	Two Harbors	Condition	Bridge Condition Rating is <50%
D7	D1 Bridge Clearance/Condition Data	Intersection	CNTY 70	Little Fork	Condition	Bridge Condition Rating is <50%
D8	D1 Bridge Clearance/Condition Data	Intersection	Long Lake Rd	Markham	Condition	Bridge Condition Rating is <50%
D9	D1 Bridge Clearance/Condition Data	Intersection	UTWN 434	Trout Lake Township	Condition	Bridge Condition Rating is <50%
D10	D1 Bridge Clearance/Condition Data	Intersection	CNTY 438	Wawina Township	Condition	Bridge Condition Rating is <50%
D11	D1 Bridge Clearance/Condition Data	Intersection	UTWN 340	Gale Brook	Condition	Bridge Condition Rating is <50%
D12	D1 Bridge Clearance/Condition Data	Intersection	CNTY 336	Prairie River	Condition	Bridge Condition Rating is <50%
D13	D1 Bridge Clearance/Condition Data	Intersection	PITZEN RD	Big Fork	Condition	Bridge Condition Rating is <50%
D14	D1 Bridge Clearance/Condition Data	Intersection	UTWN 446	Trout Lake Township	Condition	Bridge Condition Rating is <50%
D15	D1 Bridge Clearance/Condition Data	Intersection	CSAH 44	North Star Township	Condition	Bridge Condition Rating is <50%
D16	D1 Bridge Clearance/Condition Data	Intersection	TACONITE AVE	Keewatin	Condition	Bridge Condition Rating is <50%
D17	D1 Bridge Clearance/Condition Data	Intersection	CNTY 149	Bearville Township	Condition	Bridge Condition Rating is <50%
D18	D1 Bridge Clearance/Condition Data	Intersection	UT 8146	Ash Lake	Condition	Bridge Condition Rating is <50%
D19	D1 Bridge Clearance/Condition Data	Intersection	MUN 85	Duluth	Condition	Bridge Condition Rating is <50%
D20	D1 Bridge Clearance/Condition Data	Intersection	Wilton Rd	Brookston	Condition	Bridge Condition Rating is <50%
D21	D1 Bridge Clearance/Condition Data	Intersection	E SKYLINE	Duluth	Condition	Bridge Condition Rating is <50%
D22	D1 Bridge Clearance/Condition Data	Intersection	E SKYLINE	Duluth	Condition	Bridge Condition Rating is <50%
D23	D1 Bridge Clearance/Condition Data	Intersection	MUN 10	Cook	Condition	Bridge Condition Rating is <50%
D24	D1 Bridge Clearance/Condition Data	Intersection	TWNS 883	West Swan River	Condition	Bridge Condition Rating is <50%
D25	D1 Bridge Clearance/Condition Data	Intersection	Seven Bridges Road	Duluth	Condition	Bridge Condition Rating is <50%
D31	D1 Bridge Clearance/Condition Data	Intersection	MSAS 101	Duluth	Performance	Vertical Bridge Clearance is <14.6'

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
D32	D1 Bridge Clearance/Condition Data	Intersection	32 AVE E	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D33	D1 Bridge Clearance/Condition Data	Intersection	36TH AVENUE E	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D26	D1 Bridge Clearance/Condition Data	Intersection	MUN 361	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D27	D1 Bridge Clearance/Condition Data	Intersection	STURGEON ISLAND RD	Sturgeon Lake	Performance	Vertical Bridge Clearance is <14.6'
D34	D1 Bridge Clearance/Condition Data	Intersection	CSAH 80	Marble	Performance	Vertical Bridge Clearance is <14.6'
D35	D1 Bridge Clearance/Condition Data	Intersection	GARY ST	Marble	Performance	Vertical Bridge Clearance is <14.6'
D36	D1 Bridge Clearance/Condition Data	Intersection	CSAH 132	Eveleth	Performance	Vertical Bridge Clearance is <14.6'
D37	D1 Bridge Clearance/Condition Data	Intersection	CSAH 89	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D38	D1 Bridge Clearance/Condition Data	Intersection	MN 70	Rock Creek	Performance	Vertical Bridge Clearance is <14.6'
D39	D1 Bridge Clearance/Condition Data	Intersection	SUPERIOR ST	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D29	D1 Bridge Clearance/Condition Data	Intersection	MUN 32	Sandstone	Performance	Vertical Bridge Clearance is <14.6'
D30	D1 Bridge Clearance/Condition Data	Intersection	MN 39	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D28	D1 Bridge Clearance/Condition Data	Intersection	CR 931	Sturgeon River	Performance	Vertical Bridge Clearance is <14.6'
D40	D1 Bridge Clearance/Condition Data	Intersection	MORRIS THOMAS RD	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D41	D1 Bridge Clearance/Condition Data	Intersection	CSAH 76	Hibbing	Performance	Vertical Bridge Clearance is <14.6'
D42	D1 Bridge Clearance/Condition Data	Intersection	US 2	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D43	D1 Bridge Clearance/Condition Data	Intersection	CSAH 61	Rock Creek	Performance	Vertical Bridge Clearance is <14.6'
D44	D1 Bridge Clearance/Condition Data	Intersection	IDAHO ST	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D45	MnDOT At Grade Rail Crossings	Intersection	OLD CARLTON RD	Cloquet	Safety	Rail Risk Rating is >7
D46	MnDOT At Grade Rail Crossings	Intersection	N CLOQUET RD E	Carlton County	Safety	Rail Risk Rating is >7
D47	MnDOT At Grade Rail Crossings	Intersection	MNTH 123	Sandstone	Safety	Rail Risk Rating is >7
D48	MnDOT At Grade Rail Crossings	Intersection	CSAH 7	Mountain Iron	Safety	Rail Risk Rating is >7
D49	MnDOT At Grade Rail Crossings	Intersection	MIDWAY RD	Saint Louis County	Safety	Rail Risk Rating is >7
D50	MnDOT At Grade Rail Crossings	Intersection	MNTH 37	Saint Louis County	Safety	Rail Risk Rating is >7
D51	MnDOT At Grade Rail Crossings	Intersection	FAYAL RD	Mountain Iron	Safety	Rail Risk Rating is >7
D52	MnDOT At Grade Rail Crossings	Intersection	MINERAL AVE	Mountain Iron	Safety	Rail Risk Rating is >7
D53	MnDOT At Grade Rail Crossings	Intersection	VERMILION BLVD	Cook	Safety	Rail Risk Rating is >7

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
D54	MnDOT At Grade Rail Crossings	Intersection	7TH ST NE	Hinckley	Safety	Rail Risk Rating is >7
D55	MnDOT At Grade Rail Crossings	Intersection	KLEIN RD	Kerrick	Safety	Rail Risk Rating is >7
D56	MnDOT At Grade Rail Crossings	Intersection	STARK RD	Saint Louis County	Safety	Rail Risk Rating is >7
D57	MnDOT At Grade Rail Crossings	Intersection	MAPLE GROVE RD	Saint Louis County	Safety	Rail Risk Rating is >7
D58	MnDOT At Grade Rail Crossings	Intersection	E HARNEY RD	Carlton County	Safety	Rail Risk Rating is >7
D59	MnDOT At Grade Rail Crossings	Intersection	DULUTH SAINT VINCENT RD	Saint Louis County	Safety	Rail Risk Rating is >7
D60	MnDOT At Grade Rail Crossings	Intersection	MAKI RD	Saint Louis County	Safety	Rail Risk Rating is >7
D61	MnDOT At Grade Rail Crossings	Intersection	3RD ST N	Brook Park	Safety	Rail Risk Rating is >7
D62	MnDOT At Grade Rail Crossings	Intersection	MARKUSEN RD	Cromwell	Safety	Rail Risk Rating is >7
D63	MnDOT At Grade Rail Crossings	Intersection	PINE ST	Bruno	Safety	Rail Risk Rating is >7
D64	MnDOT At Grade Rail Crossings	Intersection	CR145	Carlton County	Safety	Rail Risk Rating is >7
D65	MnDOT At Grade Rail Crossings	Intersection	INDEPENDENCE RD	Saint Louis County	Safety	Rail Risk Rating is >7
D66	MnDOT At Grade Rail Crossings	Intersection	NORWAY RIDGE RD	Saint Louis County	Safety	Rail Risk Rating is >7
D67	MnDOT At Grade Rail Crossings	Intersection	BIG ROCK RD	Lake County	Safety	Rail Risk Rating is >7
D68	MnDOT At Grade Rail Crossings	Intersection	RATIKA RD	Carlton County	Safety	Rail Risk Rating is >7
D69	MnDOT At Grade Rail Crossings	Intersection	MUNGER SHAW RD	Saint Louis County	Safety	Rail Risk Rating is >7
D70	MnDOT At Grade Rail Crossings	Intersection	CR-694	Saint Louis County	Safety	Rail Risk Rating is >7
D71	MnDOT At Grade Rail Crossings	Intersection	BATCHELOR RD	Saint Louis County	Safety	Rail Risk Rating is >7
D72	MnDOT At Grade Rail Crossings	Intersection	MELRUDE RD	Saint Louis County	Safety	Rail Risk Rating is >7
D73	MnDOT At Grade Rail Crossings	Intersection	M18	Cook	Safety	Rail Risk Rating is >7
D74	MnDOT At Grade Rail Crossing Incidents	Intersection	POKEGAMA AVE	Henriette	Safety	More than 2 accidents at this location between 2004 - 2013
D75	MnDOT At Grade Rail Crossing Incidents	Intersection	MNTH 37	Saint Louis County	Safety	More than 2 accidents at this location between 2004 - 2013

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
D76	MnDOT At Grade Rail Crossing Incidents	Intersection	2ND AVE W	International Falls	Safety	More than 2 accidents at this location between 2004 - 2013
D77	MnDOT At Grade Rail Crossing Incidents	Intersection	T-422	Carlton County	Safety	More than 2 accidents at this location between 2004 - 2013
D78	MnDOT At Grade Rail Crossing Incidents	Intersection	CENTRAL HALL RD	Carlton County	Safety	More than 2 accidents at this location between 2004 - 2013
D79	MnDOT At Grade Rail Crossing Incidents	Intersection	N 43RD AVE E	Duluth	Safety	More than 2 accidents at this location between 2004 - 2013
D80	MnDOT Highway Safety Data (D1 Commercial Vehicle Crashes)	Intersection	USTH 2	Hermantown	Safety	More than 2 accidents at this location between 2016 - 2017
D81	MnDOT Highway Safety Data (D1 Commercial Vehicle Crashes)	Intersection	MNTH 61	Cook	Safety	More than 2 accidents at this location between 2016 - 2017
D82	MnDOT Highway Safety Data (D1 Commercial Vehicle Crashes)	Intersection	4TH ST NW	Grand Rapids	Safety	More than 2 accidents at this location between 2016 - 2017
D83	MnDOT Highway Safety Data (D1 Commercial Vehicle Crashes)	Intersection	USTH 2	Itasca County	Safety	More than 2 accidents at this location between 2016 - 2017
D84	MnDOT Highway Safety Data (D1 Commercial Vehicle Crashes)	Intersection	EMERSON RD	Saint Louis County	Safety	More than 2 accidents at this location between 2016 - 2017
D85	MnDOT Highway Safety Data (D1 Commercial Vehicle Crashes)	Intersection	MNTH 18	Aitkin County	Safety	More than 2 accidents at this location between 2016 - 2017
D86	MnDOT Highway Safety Data (D1 Commercial Vehicle Crashes)	Intersection	USTH 53	Saint Louis County	Safety	More than 2 accidents at this location between 2016 - 2017
D87	MnDOT Highway Safety Data (D1 Commercial Vehicle Crashes)	Intersection	MNTH 210	Aitkin County	Safety	More than 2 accidents at this location between 2016 - 2017
D88	MnDOT Highway Safety Data (D1 Commercial Vehicle Crashes)	Intersection	35	Scanlon	Safety	More than 2 accidents at this location between 2016 - 2017
DA	Streetlight Analysis	Segment	Hoover Road	Virginia	Performance	Fraction of FFS <0.5 (congestion)
DB	Streetlight Analysis	Segment	1st Street	Keewatin	Performance	Fraction of FFS <0.5 (congestion)
DC	Streetlight Analysis	Segment	Mountain Iron Dr.	Virginia	Performance	Fraction of FFS <0.5 (congestion)
DD	Streetlight Analysis	Segment	Highway 61	Grand Portage	Performance	Fraction of FFS <0.5 (congestion)/Ratio of 50%-95% Travel Time (Truck TTR) >16
DE	Streetlight Analysis	Segment	Port Terminal Dr.	Duluth	Performance	Ratio of 50%-95% Travel Time (Truck TTR) >16
DF	Streetlight Analysis	Segment	Highway 2	Saginaw	Performance	Ratio of 50%-95% Travel Time (Truck

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
						TTR) >16
DG	Streetlight Analysis	Segment	Grand Ave. Ramp onto I-35	West Duluth	Performance	Ratio of 50%-95% Travel Time (Truck TTR) >16
DCS	CPCS Crash Density Analysis/Crash Factor Score	Segment	USTH 169	Aitkin (Heading North)	Safety	Segment with high-density crash rates
DBZ	CPCS Crash Density Analysis/Crash Factor Score	Segment	Highway 61	Silver Bay to Grand Marais	Safety	Segment with high-density crash rates
DCA	CPCS Crash Density Analysis/Crash Factor Score	Segment	Highway 61	Castle Danger	Safety	Segment with high-density crash rates
DCB	CPCS Crash Density Analysis/Crash Factor Score	Segment	Highway 61	Grand Marais	Safety	Segment with high-density crash rates
DCE	CPCS Crash Density Analysis/Crash Factor Score	Segment	Highway 5	Grand Rapids (Heading North)	Safety	Segment with high-density crash rates
DBY	CPCS Crash Density Analysis/Crash Factor Score	Segment	Central Ave	Nashwauk	Safety	Segment with high-density crash rates
DCD	CPCS Crash Density Analysis/Crash Factor Score	Segment	Elm St	Kettle River	Safety	Segment with high-density crash rates
DBX	CPCS Crash Density Analysis/Crash Factor Score	Segment	Bridge Ave		Safety	Segment with high-density crash rates
DCP	CPCS Crash Density Analysis/Crash Factor Score	Segment	MNTH 33	Cloquet	Safety	Segment with high-density crash rates
DCH	CPCS Crash Density Analysis/Crash Factor Score	Segment	Miller Trunk Hwy	Eveleth (Heading South)	Safety	Segment with high-density crash rates
DCI	CPCS Crash Density Analysis/Crash Factor Score	Segment	Miller Trunk Hwy	Duluth (Near Airport)	Safety	Segment with high-density crash rates
DCJ	CPCS Crash Density Analysis/Crash Factor Score	Segment	Miller Trunk Hwy	Eveleth (Heading South)	Safety	Segment with high-density crash rates
DCT	CPCS Crash Density Analysis/Crash Factor Score	Segment	USTH 169	Grand Rapids	Safety	Segment with high-density crash rates
DCU	CPCS Crash Density Analysis/Crash Factor Score	Segment	USTH 169	Hibbing	Safety	Segment with high-density crash rates
DCV	CPCS Crash Density Analysis/Crash	Segment	USTH 169	Grand Rapids	Safety	Segment with high-density crash rates

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
	Factor Score					
DCK	CPCS Crash Density Analysis/Crash Factor Score	Segment	Miller Trunk Hwy	Virginia	Safety	Segment with high-density crash rates
DCL	CPCS Crash Density Analysis/Crash Factor Score	Segment	Miller Trunk Hwy	Duluth	Safety	Segment with high-density crash rates
DCN	CPCS Crash Density Analysis/Crash Factor Score	Segment	MNTH 23	Duluth	Safety	Segment with high-density crash rates
DCO	CPCS Crash Density Analysis/Crash Factor Score	Segment	MNTH 23	Duluth	Safety	Segment with high-density crash rates
DCF	CPCS Crash Density Analysis/Crash Factor Score	Segment	Mesaba Ave	Duluth	Safety	Segment with high-density crash rates
DCG	CPCS Crash Density Analysis/Crash Factor Score	Segment	Mesaba Ave	Duluth	Safety	Segment with high-density crash rates
DCQ	CPCS Crash Density Analysis/Crash Factor Score	Segment	MNTH 33	Cloquet	Safety	Segment with high-density crash rates
DCZ	CPCS Crash Density Analysis/Crash Factor Score	Segment	USTH 53	Duluth	Safety	Segment with high-density crash rates
DCW	CPCS Crash Density Analysis/Crash Factor Score	Segment	USTH 169	Swan Lake to Hibbing	Safety	Segment with high-density crash rates
DCX	CPCS Crash Density Analysis/Crash Factor Score	Segment	USTH 169	Grand Rapids	Safety	Segment with high-density crash rates
DCY	CPCS Crash Density Analysis/Crash Factor Score	Segment	USTH 169	Hibbing	Safety	Segment with high-density crash rates
DCR	CPCS Crash Density Analysis/Crash Factor Score	Segment	MNTH 37	Hibbing (Heading East)	Safety	Segment with high-density crash rates
DBV	CPCS Crash Density Analysis/Crash Factor Score	Segment	1st St	Grand Rapids	Safety	Segment with high-density crash rates
DCC	CPCS Crash Density Analysis/Crash Factor Score	Segment	CSAH 5	Chisolm (Heading South)	Safety	Segment with high-density crash rates
DCM	CPCS Crash Density Analysis/Crash Factor Score	Segment	MNTH 18	Mille Lacs Lake	Safety	Segment with high density crash rates
DBW	CPCS Crash Density Analysis/Crash Factor Score	Segment	1st St	Duluth	Safety	Segment with high density crash rates
DF	MnDOT Pavement Condition/Projects	Segment	I35		Condition	In Duluth, on Interstate 35, reconstruct interchange.

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
DIE	MnDOT Pavement Condition/Projects	Segment	MN1		Condition	Resurface the highway from the east junction of Highway 65 to the north junction of Highway 53 in Itasca County
DAQ	MnDOT Pavement Condition/Projects	Segment	MN65		Condition	Resurface highway from County Highway 8 to State Highway 71
DG	MnDOT Pavement Condition/Projects	Segment	US53		Condition	Resurface the northbound lanes of the highway from the north end of the Pale Face River to 0.35 miles south of County Road 93 and on the southbound lanes of the highway from Metske Road to South Moon Lake Drive in St. Louis County
DH	MnDOT Pavement Condition/Projects	Segment	MN73		Condition	Resurface the highway in various locations near Floodwood in St. Louis County
DBF	MnDOT Pavement Condition/Projects	Segment	US169		Condition	Safety improvements on Highway 169 and County rd 137
DZ	MnDOT Pavement Condition/Projects	Segment	I35		Condition	In Duluth, on Interstate 35, reconstruct interchange.
DBG	MnDOT Pavement Condition/Projects	Segment	US2		Condition	Highway 2 resurface pavement Ball Club Area
DAR	MnDOT Pavement Condition/Projects	Segment	MN37		Condition	Resurface highway from State Highway 53 to State Highway 135 thru Gilbert.
DAA	MnDOT Pavement Condition/Projects	Segment	MN73		Condition	Resurface the highway from the junction of Highway 1 to the junction of Highway 53 in St. Louis County
DAS	MnDOT Pavement Condition/Projects	Segment	I35		Condition	In Duluth, on Interstate 35, reconstruct interchange.
DI	MnDOT Pavement Condition/Projects	Segment	I35		Condition	Reconstruct Bridges and access into the Duluth Port
DAB	MnDOT Pavement Condition/Projects	Segment	MN210		Condition	Resurface and reconstruct the highway and drainage improvements in Cromwell in Carlton County
DBH	MnDOT Pavement Condition/Projects	Segment	I35		Condition	In Duluth, on Interstate 35, reconstruct interchange.

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
DJ	MnDOT Pavement Condition/Projects	Segment	I35		Condition	Reconstruct Bridges and access into the Duluth Port
DAC	MnDOT Pavement Condition/Projects	Segment	MN169		Condition	Resurface the highway from the junction of Hidden Valley Road to the junction of County Road 18 Power Dam Road in Lake County
DK	MnDOT Pavement Condition/Projects	Segment	MN65		Condition	Resurface the highway from 0.14 miles south of County Road 2 to the north junction of Highway 27 in Aitkin County
DAD	MnDOT Pavement Condition/Projects	Segment	MN65		Condition	Resurface the highway from 0.7 miles south of the south junction of Highway 200 to the south junction of Highway 169 in Itasca County
DBI	MnDOT Pavement Condition/Projects	Segment	US2		Condition	Resurface highway from .4 mi. E. Prairie River to highway 200
DAT	MnDOT Pavement Condition/Projects	Segment	MN23		Condition	Culvert improvements at Gegebic Creek in Duluth
DBJ	MnDOT Pavement Condition/Projects	Segment	MN65		Condition	Resurface highway from N. jct Highway 1 to .5 mi. s. County highway 8
DAU	MnDOT Pavement Condition/Projects	Segment	US53		Condition	Intersection safety improvements at Highway 53 and County Rd 95
DAV	MnDOT Pavement Condition/Projects	Segment	MN23		Condition	Culvert improvements at US Steel Creek in Duluth
DAW	MnDOT Pavement Condition/Projects	Segment	I35		Condition	In Duluth, on Interstate 35, reconstruct interchange.
DAX	MnDOT Pavement Condition/Projects	Segment	I35		Condition	Drainage System improvement at Lakewalk in Duluth
DBK	MnDOT Pavement Condition/Projects	Segment	MN23		Condition	Resurface highway from highway 18 the main st in Askov
DAE	MnDOT Pavement Condition/Projects	Segment	MN61		Condition	Realign and replace the Silver Creek Bridge and approaches in Lake County
DBL	MnDOT Pavement Condition/Projects	Segment	US53		Condition	Resurface Highway Northbound only from 1.3 m. n. Swan Lake Rd to .1 mi. s. Cemetery Rd
DL	MnDOT Pavement	Segment	MN61		Condition	Signage Replacement

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
	Condition/Projects					
DAY	MnDOT Pavement Condition/Projects	Segment	MN61		Condition	Resurface highway from Reservation Bay Rd. to US/Canadian border.
DAF	MnDOT Pavement Condition/Projects	Segment	MN61		Condition	Install traffic control devices from just east of Grand Marais to the Canadian Border in Cook County
DBM	MnDOT Pavement Condition/Projects	Segment	MN47		Condition	Resurface highway from Cemetery Rd to 305th lane
DM	MnDOT Pavement Condition/Projects	Segment	MN1		Condition	Resurface the highway in Northome
DAG	MnDOT Pavement Condition/Projects	Segment	MN169		Condition	Resurface the highway from 0.9 miles north of the junction of Highway 53 to 0.17 miles south of County Road 26 in St. Louis County
DAH	MnDOT Pavement Condition/Projects	Segment	US53		Condition	Resurface the highway from the junction of Crescent Drive to the junction of 4th Street and on Highway 11 from the east junction of Highway 71 to the east junction of Highway 53 in International Falls in Koochiching County
DN	MnDOT Pavement Condition/Projects	Segment	US53		Condition	Grade and resurface the highway at the CN Railroad bridge and remove the trail bridge at mile post 58 in St. Louis County
DAZ	MnDOT Pavement Condition/Projects	Segment	I35		Condition	In Duluth Drainage and fencing improvements
DO	MnDOT Pavement Condition/Projects	Segment	US71		Condition	Resurface and reconstruct the highway from the Beltrami/Itasca County line to the Itasca/Koochiching County line in Itasca County
DP	MnDOT Pavement Condition/Projects	Segment	MN39		Condition	Reconstruct and drainage improvements for the highway from the junction of Highway 23 to the north end of the Oliver Bridge in Duluth in St. Louis County
DBA	MnDOT Pavement	Segment	MN27		Condition	Resurface highway from State

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
	Condition/Projects					Highway 65 to Aitkin/Carlton County Line and Shoulder Safety Improvements along Highway 27
DAI	MnDOT Pavement Condition/Projects	Segment	US169		Condition	Intersection Safety Improvements at Highway 169 and Highway 65
DBN	MnDOT Pavement Condition/Projects	Segment	MN37		Condition	Safety improvements on Highway 37 and County Rd 7
DAJ	MnDOT Pavement Condition/Projects	Segment	MN6		Condition	Resurface the highway from 1.6 miles north of County Road 136 to 0.9 miles north of Highway 286 in Itasca County
DBO	MnDOT Pavement Condition/Projects	Segment	MN210		Condition	Intersection improvements and turn lanes
DBB	MnDOT Pavement Condition/Projects	Segment	I35		Condition	Upgrade fiber optic cable and traffic cameras in Duluth.
DBP	MnDOT Pavement Condition/Projects	Segment	US53		Condition	Highway 53/194 Intersection Safety Improvements
DQ	MnDOT Pavement Condition/Projects	Segment	MN61		Condition	Resurface and reconstruct the highway from 1.8 miles north of the Cutface Creek to 0.1 miles south of County Road 14 and replace the box culvert at the Fall River in Grand Marais in Cook County
DAK	MnDOT Pavement Condition/Projects	Segment	US53		Condition	Safety improvements in City of Virginia
DBQ	MnDOT Pavement Condition/Projects	Segment	MN210		Condition	Roadway improvement on Hwy 210 between Deerwood & Aitkin
DR	MnDOT Pavement Condition/Projects	Segment	MN135		Condition	reconstruct pavement, new curb & gutter, utilities and accessibility improvements
DAL	MnDOT Pavement Condition/Projects	Segment	MN169		Condition	Resurface the highway from the junction of Hidden Valley Road to the junction of County Road 18 Power Dam Road in Lake County
DAM	MnDOT Pavement Condition/Projects	Segment	I35		Condition	Repair the appurtenances at the Carlton Weight Inspection pull-off site and install signs on the mainline on the north side of Interstate 35, 0.21

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
						miles north of Highway 61
DBC	MnDOT Pavement Condition/Projects	Segment	MN123		Condition	Resurface highway, drainage improvements & pedestrian access improvements in Sandstone.
DS	MnDOT Pavement Condition/Projects	Segment	MN65		Condition	Resurface the highway from 1.4 miles south of the Sandy River to 0.07 miles south of south junction of Highway 200 in Aitkin County
DAN	MnDOT Pavement Condition/Projects	Segment	MN61		Condition	Safety Improvements, LED lighting Silver Cliff and Lafayette Tunnel & in Duluth i-35 tunnels
DBR	MnDOT Pavement Condition/Projects	Segment	MN61		Condition	Resurface Highway from .1 Mi N Knife River to .3 mi. s County Highway 61
DBS	MnDOT Pavement Condition/Projects	Segment	MN1		Condition	Resurface highway from N. Bass Lake Rd to .7 mi. S County Rd 550
DT	MnDOT Pavement Condition/Projects	Segment	MN61		Condition	Repair the Gooseberry Falls Rest Area in Lake County
DBD	MnDOT Pavement Condition/Projects	Segment	US53		Condition	Center Median safety Improvements on Highway 53 between Eveleth and Virginia
DU	MnDOT Pavement Condition/Projects	Segment	MN6		Condition	Resurface the highway from 0.24 miles north of the junction of Highway 1 and the junction of Highway 71 in Koochiching County
DBE	MnDOT Pavement Condition/Projects	Segment	MN6		Condition	Resurface highway from Cass/Itasca County line to State Highway 2 West of Cohasset
DAO	MnDOT Pavement Condition/Projects	Segment	I35		Condition	In Duluth, on Interstate 35, reconstruct interchange.
DBT	MnDOT Pavement Condition/Projects	Segment	I35		Condition	Reconstruct pavement
DAP	MnDOT Pavement Condition/Projects	Segment	MN6		Condition	Resurface the highway from Highway 2 to County Road 128 in Deer River
DBU	MnDOT Pavement Condition/Projects	Segment	MN194		Condition	Resurface highway from Highway 2 to highway 53
DV	MnDOT Pavement Condition/Projects	Segment	MN135		Condition	Resurface the highway, install sidewalks and pedestrian ramps from

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
						0.5 miles east of the Highway 53 junction to 0.58 miles south of County Road 21 in St. Louis County
DW	MnDOT Pavement Condition/Projects	Segment	US53		Condition	Highway 53 safety improvements from Angora to 5 mi. North of Ray
DX	MnDOT Pavement Condition/Projects	Segment	I35		Condition	Reconstruct Bridges and access into the Duluth Port

Appendix C – Project Lists

This appendix contains a list of the location-specific needs and issues identified through analysis of data provided by MnDOT. The fields in the table below are:

- **ID:** This code refers to the need/issue ID printed on maps in this Working Paper.
- **Program:** the funding program which listed the project
- **Project Number:** identifier assigned by planning agency
- **Route or Location:** the highway name or number corresponding to the project
- **Year**: first year of programmed work
- **Cost:** total cost of project (including federal, state, and local costs)
- **Description**: when available, a description of the work to be performed

Depending on the program, not all data attributes were populated. Data for this appendix came from the following sources:

- MnDOT's **State Transportation Improvement Program** (STIP), which identifies a schedule and funding amount for transportation projects for four years. The project list in the STIP includes all state and local projects with federal highway and/or transit funding, as well as state-funded projects. The STIP also contains freight, rail, and port investments, for reference. Figure 4-1 shows the projects listed in the STIP along with the need or issue type that each project is intended to address.
- MnDOT's **Capital Highway Investment Plan** (CHIP), which lists 10 years of highway investments on the state highway network. The CHIP includes STIP projects, as well as planned investments for six years after the scope of the 4-year STIP. These longer-term plans are not guaranteed to be constructed, but are listed in the CHIP to aid in coordination and planning. Figure 4-2 shows CHIP projects, which were classified as "condition" projects.
- The Duluth-Superior Metropolitan Interstate Council's (DSMIC) **Transportation Improvement Plan** (TIP), which lists four years of federally-funded projects.
- **County improvement plans**, which list four to five years of upcoming road and bridge projects on county-managed road networks. Figure 4-3 shows the DSMIC TIP as well as county improvement plans. As of the time of this writing, only Pine and Aitkin Counties had provided their improvement plans to the project team.

Figure C-1: District 1 Funding Projects Listing

ID	Program	Project Number	Route or Location	Year	Cost	Description
1	CHIP	0980-09823	I35	2023	$2,175,000	SB at CSAH 61, Redeck, Repair, Repaint Br. 09823
2	CHIP	0980-9469	I35	2023	$650,000	I-35, AT CSAH 26, REDECK BR# 9469
3	CHIP	6917-6602	US53	2023	$2,827,680	NB, Over the St. Louis River, Replace Br. 6602
4	CHIP	1603-8298	MN61	2023	$411,000	MN 61, OVER STREAM, REPLACE BR# 8298
5	CHIP	1603	MN61	2023	$1,300,000	MN 61, REPLACE 4 BOX CULVERTS, BR 8299,8300,8301,8302
6	CHIP	1603	MN61	2023	$1,300,000	MN 61, REPLACE 4 BOX CULVERTS, BR 8299,8300,8301,8302
7	CHIP	1603	MN61	2023	$1,300,000	MN 61, REPLACE 4 BOX CULVERTS, BR 8299,8300,8301,8302
8	CHIP	1603	MN61	2023	$1,300,000	MN 61, REPLACE 4 BOX CULVERTS, BR 8299,8300,8301,8302
9	CHIP	1605-5923	MN61	2023	$1,150,000	MN 61, OVER PIDGEON RIVER, REHABILITATE BR# 5923
10	CHIP	6928	MN73	2023	$300,000	MN 73, OVER STREAM, REPLACE BR. 89395
11	CHIP	6929-9261	MN73	2023	$1,130,000	MN 73, OVER THE W. SWAN RIVER, REPLACE/REHAB BR# 9261
12	CHIP	3116, 6934	US169	2023	$1,100,000	US 169 NB, REHAB BR. 31010;31012;69064
13	CHIP	3116, 6934	US169	2023	$1,100,000	US 169 NB, REHAB BR. 31010;31012;69064
14	CHIP	3116, 6934	US169	2023	$1,100,000	US 169 NB, REHAB BR. 31010;31012;69064
15	CHIP	6908-XXX	US2	2024	$350,000	US 2, REPLACE BOX CULVERT BR. 8017
16	CHIP	5880-9790	I35	2024	$4,123,941	I-35, NB, 1.2 MILES NORTH OF THE JCT MN 48, OVER THE BNSF RAIL ROAD, REPLACE BR# 9790
17	CHIP	5880-9789	I35	2024	$3,279,320	I-35, SB, 1.2 MILES NORTH OF THE JCT MN 48, OVER THE BNSF RAIL ROAD, REPLACE BR# 9789
18	CHIP	6982-XXX	I35	2024	$1,300,000	I-35, PRESERVATION CHIP SEAL DECKS 69816, 69870
19	CHIP	6982-XXX	I35	2024	$1,300,000	I-35, PRESERVATION CHIP SEAL DECKS 69816, 69870
20	CHIP	5813-58001	MN48	2024	$140,000	MN 48, OVER THE ST. CROIX RIVER, OVERLAY BR# 58001
21	CHIP	6918-XXX	US53	2024	$1,750,000	US 53 SB, OVER TH 37, BR REPLACEMENT
22	CHIP	3805-38008	US61	2024	$1,700,000	MN 61, OVER THE CROW CREEK, REDECK BR# 38008
23	CHIP	3116-XXX	US169	2024	$1,100,000	US 169 SB, REHAB Br. 31009,31011,69063
24	CHIP	3116-XXX	US169	2024	$1,100,000	US 169 SB, REHAB Br. 31009,31011,69063
25	CHIP	3116-XXX	US169	2024	$1,100,000	US 169 SB, REHAB Br. 31009,31011,69063
26	CHIP	0102-6565	MN18	2025	$400,000	MN 18 OVER REDDY CREEK, 4.2 MI N. OF MALMO, REPLACE BR. 6565
27	CHIP	5880-9787	I35	2025	$1,924,650	I-35, SB, OVER THE GRINDSTONE RIVER, REPLACE/REHABILITATE BR# 9787

ID	Program	Project Number	Route or Location	Year	Cost	Description
28	CHIP	5880-9788	I35	2025	$1,924,620	I-35, NB, OVER THE GRINDSTONE RIVER, REPLACE/REHABILITATE BR# 9788
29	CHIP	6917-XXX	US53	2025	$1,750,000	US 53NB, OVER TH 37, BR REPLACEMENT
30	CHIP	0112-1014	MN65	2025	$125,000	MN 65, OVER THE SANDY RIVER, RE-OVERLAY BR# 1014
31	CHIP	6935-XXX	US169	2025	$475,000	US 169, REMOVE/ABANDON BR. 69081, 69082
32	CHIP	6935-XXX	US169	2025	$475,000	US 169, REMOVE/ABANDON BR. 69081, 69082
33	CHIP	0121-xxx, 0914-XXX	MN210	2025	$1,750,000	MN 210, REPLACE 5 BOX CULVERTS, BR. 4321,6293,6295,8448,8449
34	CHIP	0121-xxx, 0914-XXX	MN210	2025	$1,750,000	MN 210, REPLACE 5 BOX CULVERTS, BR. 4321,6293,6295,8448,8449
35	CHIP	0121-xxx, 0914-XXX	MN210	2025	$1,750,000	MN 210, REPLACE 5 BOX CULVERTS, BR. 4321,6293,6295,8448,8449
36	CHIP	0121-xxx, 0914-XXX	MN210	2025	$1,750,000	MN 210, REPLACE 5 BOX CULVERTS, BR. 4321,6293,6295,8448,8449
37	CHIP	0121-xxx, 0914-XXX	MN210	2025	$1,750,000	MN 210, REPLACE 5 BOX CULVERTS, BR. 4321,6293,6295,8448,8449
38	CHIP	3808-XXX	US61	2026	$800,000	MN61, REPLACE BOX CULVERTS AT CARIBOU RIVER, BR. 5278
39	CHIP	6930-6503	MN73	2026	$1,900,000	MN 73, OVER THE STURGEON RIVER, REPLACE/REHABILITATE BR# 6503
40	CHIP	6922-6528	MN73	2026	$1,800,000	MN 73, OVER THE LITTLEFORK RIVER, REPLACE/REHABILITATE BR# 6528
41	CHIP	6982-69846	I35	2027	$1,750,000	I-35, AT CSAH 14, REDECK BR# 69846
42	CHIP	6982-XXX	I35	2027	$44,100,000	I 35 NB, 3.5 MILE SW OF JCT I 535 OVER CP RAIL AND NB OFF RAMP TO CENTRAL AVENUE, REPLACE BR# 69879 AND 69879E
43	CHIP	6982-XXX	I35	2027	$44,100,000	I 35 NB, 3.5 MILE SW OF JCT I 535 OVER CP RAIL AND NB OFF RAMP TO CENTRAL AVENUE, REPLACE BR# 69879 AND 69879E
44	CHIP	6982-XXX	I35	2027	$44,100,000	I 35 NB, 3.5 MILE SW OF JCT I 535 OVER CP RAIL AND NB OFF RAMP TO CENTRAL AVENUE, REPLACE BR# 69879 AND 69879E
45	CHIP	6982-XXX	I35	2027	$44,100,000	I 35 NB, 3.5 MILE SW OF JCT I 535 OVER CP RAIL AND NB OFF RAMP TO CENTRAL AVENUE, REPLACE BR# 69879 AND 69879E
46	CHIP	6982-XXX	I35	2027	$44,100,000	I 35 NB, 3.5 MILE SW OF JCT I 535 OVER CP RAIL AND NB OFF RAMP TO CENTRAL AVENUE, REPLACE BR# 69879 AND 69879E
47	CHIP	6982-XXX	I35	2027	$44,100,000	I 35 NB, 3.5 MILE SW OF JCT I 535 OVER CP RAIL AND NB OFF RAMP TO CENTRAL

ID	Program	Project Number	Route or Location	Year	Cost	Description
						AVENUE, REPLACE BR# 69879 AND 69879E
48	CHIP	6917-69020	US53	2027	$650,000	US 53, SB, OVER THE ST. LOUIS RIVER, REDECK AND PAINT BR# 69020
49	CHIP	3805-38007	US61	2027	$2,750,000	MN 61, OVER THE BAPTISM RIVER, REDECK BR# 38007
50	CHIP	5802-5718	MN123	2027	$1,300,000	MN 123,OVER THE KETTLE RIVER, RE-DECK BR# 5718
51	CHIP	6917-69018	US53	2028	$1,620,000	US 53 NB, OVER THE WHITE FACE RIVER, REPLACE/REHAB BR# 69018
52	CHIP	3111-9211	MN65	2028	$1,610,000	MN 65, OVER SWAN RIVER, REPLACE/REHAB BR. 9211
53	CHIP	915	MN210	2028	$1,125,000	MN 210, REPLACE 3 BOX CULVERTS
54	CHIP	915	MN210	2028	$1,125,000	MN 210, REPLACE 3 BOX CULVERTS
55	CHIP	915	MN210	2028	$1,125,000	MN 210, REPLACE 3 BOX CULVERTS
56	CHIP	6980-69808	I535	2028	$6,000,000	I-535, IN DULUTH, OVER GARFIELD AVENUE, REDECK BR# 69808
57	CHIP	6980-69808A	I535	2028	$3,000,000	Redeck Br. 69808A I535 NB On Ramp over Garfield Ave
58	CHIP	6980-69810	I535	2028	$2,000,000	Redeck Br. 69810 I535 over BNSF RR
59	CHIP	6980-69809	I535	2028	$4,000,000	Redeck Br. 69809 I535 SB Off Ramp over BNSF RR
60	CHIP	6981-XXX	I535	2028	200,000,000	I-535, BETWEEN DULUTH and SUPERIOR WISCONSIN OVER ST LOUIS RIVER, REPLACE BLATNIK BRIDGE #9030 MAIN SPAN, Improve
61	CHIP	3804-XXX	MN61	2024	$1,515,635	MN 61, 0.2 MILE NORTH OF THE DM and IR RAILWAY BRIDGE TO 180 FEET EAST OF 5TH STREET, MEDIUM MILL/OVERLAY
62	CHIP	0102-XXX	MN18	2023	$5,615,508	MN 18, NORTH JCT US 169 TO NORTH JCT MN 47, MEDIUM MILL/OVERLAY
63	CHIP	3103-XXX	US2	2028	$2,683,767	US 2, .13 MI W. PINCHRERRY RD TO E. BASS LAKE RD., MEDIUM MILL /OVERLAY
64	CHIP	6918-XXX, 6919-XXX	US53	2025	$6,085,773	US 53, 12TH AVE WEST IN VIRGINIA TO 0.1 MILE NORTH OF WAYSIDE REST, MEDIUM MILL/OVERLAY
65	CHIP	3103-XXX	US2	2024	$1,902,462	US 2, EB AND WB, IN GRAND RAPIDS, 0.1 MILE EAST OF LA PRAIRIE AVE, MEDIUM MILL/OVERLAY
66	CHIP	0915-XXX	MN210	2028	$9,383,844	MN 210, EAST END OF THE BRIDGE OVER RAILROAD TO 0.4 MILE WEST OF I 35, MEDIUM MILL/OVERLAY
67	CHIP	3801-XXX	MN1	2028	$207,648	MN 1, 0.2 Mi N OF KAWISHIWI RIVER TO 0.2 MI S OF KAWISHIWI RIVER, MEDIUM MILL/ OVERLAY
68	CHIP	6908-XXX	US2	2025	$9,549,688	US 2, MN 194 TO 6TH STREET E. IN PROCTOR, RECLAIM
69	CHIP	5801-XXX	MN23	2028	$4,378,830	MN 23, MN 107 TO S JCT I 35, THICK MILL/OVERLAY
70	CHIP	0115-XXX	US169	2027	$1,492,950	US 169, 0.2 MI N JCT CR-76 TO JCT TH 210, MEDIUM MILL/OVERLAY

ID	Program	Project Number	Route or Location	Year	Cost	Description
71	CHIP	3604-XXX	MN11	2027	$4,441,195	MN 11, KOOCH. CO LINE TO 0.7 MI W WHITEFISH CREEK, MEDIUM MILL / OVERLAY
72	CHIP	6936-XXX	MN169	2024	$1,514,449	MN 169, 1100 FEET SOUTH OF THE WEST JCT MN 1 TO WEST JCT MN 1, MEDIUM MILL/OVERLAY
73	CHIP	3808-XXX, 1601-XXX	MN61	2023	$8,191,355	MN 61, 2.6 MILES NORTH OF CSAH-6 TO 1.4 MILE SOUTH OF CSAH 79, MEDIUM MILL/OVERLAY
74	CHIP	6935-XXX	US169	2024	$7,571,065	US 169, NB, 0.4 MILE SOUTH OF JCT CR 67 TO 0.07 MILE WEST OF CR 109, MEDIUM MILL/OVERLAY
75	CHIP	6925-XXX, 6926-XXX	MN61	2023	$4,397,142	MN 61, NB and SB, IN DULUTH, FROM 0.3 MILE NORTH OF NORTH SUPERIOR STREET TO CSAH 33 (MCQUADE ROAD), MEDIUM MILL/OVERLAY
76	CHIP	3108-XXX	MN38	2028	$2,298,136	MN 38, 1.1 MI N OF US-2 TO 0.2 MI N CSAH-49, MEDIUM MILL/OVERLAY
77	CHIP	3108-XXX	MN38	2026	$2,879,925	MN 38, 0.3 MI S. JCT CSAH 14 TO JCT MN 1/CSAH 5, MEDIUM MILL/ OVERLAY
78	CHIP	3115-XXX	US169	2028	$1,114,567	US 169, MISHAWAKA ROAD TO 13TH ST SW, MEDIUM MILL /OVERLAY
79	CHIP	3103-XXX	US2	2027	$6,021,590	US 2, .1 MI E CSAH 62 TO W LIMITS OF GRAND RAPIDS, MEDIUM MILL/OVERLAY
80	CHIP	3614-XXX	MN217	2025	$844,119	MN 217, RECLAIM/RECONSTRUCT IN LITTLE FORK
81	CHIP	3115-XXX	US169	2028	$8,524,520	US 169, W. JCT. 10th AVE. NE.(Grand Rapids) TO MORRISON AVE (Coleraine) MEDIUM MILL/OVERLAY
82	CHIP	3101-XXX	MN1	2028	$4,529,116	MN 1, 0.41 MI N OF CSAH 38 TO 0.5 MI N OF BASS LAKE ROAD, MEDIUM MILL/OVERLAY
83	CHIP	6920-XXX	US53	2025	$1,150,988	US 53, SOUTH LIMIT OF COOK TO SOUTH END OF THE LITTLE FORK RIVER BRIDGE, RVR BR, MEDIUM MILL/OVERLAY
84	CHIP	3605-XXX	MN11	2025	$128,093	MN 11, IN INTERNATIONAL FALLS, 8th AV to 6TH AVE W, MEDIUM MILL/OVERLAY
85	CHIP	6982-XXX	I35	2026	$587,852	I-35, UNDER 5TH AVE W. BR, MEDIUM MILL/OVERLAY
86	CHIP	3108-XXX	MN38	2025	$1,979,948	MN 38, JCT TH 286 to 0.1 MI S CSAH 43, MEDIUM MILL/OVERLAY
87	CHIP	0108-XXX	MN47	2028	$2,912,771	MN 47, MILLE LACS-AITKIN CO LN TO 0.1 MI N OF CR-80,MEDIUM MILL/OVERLAY
88	CHIP	3108-XXX	MN38	2023	$424,744	MN 38, SOUTH LIMIT OF BIG FORK TO 0.3 MILE SOUTH OF CR 14, MEDIUM MILL/OVERLAY
89	CHIP	3806	MN61	2028	$705,000	MN 61, 1.2 MI N. OF GOOSEBERRY RV TO 0.85 MI S. OF SPLIT ROACK RV., MEDIUM MILL/OVERLAY
90	CHIP	3107-XXX	MN6	2027	$3,101,869	MN 6, N END BIGFORK RV BR TO S JCT MN 1, MEDIUM MILL/OVERLAY
91	CHIP	6927-XXX	MN73	2025	$4,472,599	MN 73, 0.7 MILE NORTH OF CSAH 86 TO SOUTH JCT US 2, MEDIUM MILL/OVERLAY

ID	Program	Project Number	Route or Location	Year	Cost	Description
92	CHIP	1603-XXX	MN61	2023	$10,482,326	MN 61, 01. MI S CSAH 14 TO FLUTE REED RIVER, RECLAIM
93	CHIP	3103-XXX	US2	2027	$3,952,524	US2, JCT TH38 to E TH169, MEDIUM MILL/OVERLAY
94	CHIP	3805-XXX, 3806-XXX	MN61	2024	$318,137	MN 61, 0.6 MILE SOUTH OF GOOSEBERRY PARK TO 0.1 MILENORTH OF THE GOOSEBERRY RIVER, CPR/GRIND
95	CHIP	6906-XXX	US2	2027	$7,413,458	US 2, 0.1 MI E. JCT TH 200 TO W LIMITS OF FLOODWOOD, RECLAIM
96	CHIP	3605-XXX	MN11	2025	$5,787,723	MN 11, IN INTERNATIONAL FALLS, 0.3 MILE WEST OF THE WEST JCT CR 332 TO 12TH AVE, MEDIUM MILL/OVERLAY
97	CHIP	0118-XXX	MN210	2028	$900,000	MN 210, 0.8 MILE WEST OF US 169 TO RIPPLE RIVER BRIDGE, MEDIUM MILL/OVERLAY
98	CHIP	3107-XXX	MN6	2024	$5,992,475	MN 6, 11TH AVENUE IN DEER RIVER TO 1.6 MILES NORTH OF CR 136, MEDIUM MILL/OVERLAY
99	CHIP	0118-XX/0119	MN210	2026	$-	MN 210, FROM WEST OF AITKIN TO RIPPLE RIVER IN AITKIN CO, MILL AND OVERLAY (DESIGNED BY DISTRICT 3, FUNDED BY DISTRICT 1)
100	CHIP	6928-XXX	MN73	2025	$2,350,700	MN 73, IN FLOODWOOD FROM 1ST AVE TO 0.4 MI N CR 191, MEDIUM MILL/OVERLAY
101	CHIP	6907-XXX, 6908-XXX	US2	2023	$3,066,874	US 2, 0.1 MILE WEST OF CR 874 RT TO MN 194, MEDIUM MILL/OVERLAY
102	CHIP	3115-XXX	US169	2028	$1,462,415	US 169, 13Th ST SW TO E. JCT TH 2, MEDIUM MILL/OVERLAY
103	CHIP	0901-XXX	MN23	2023	$8,665,660	MN 23, 0.4 MILE EAST OF THE PINE-CARLTON COUNTY LINE TO THE SAINT LOUIS RIVER BRIDGE, MEDIUM MILL/OVERLAY
104	CHIP	0980-XXX	I35	2027	$6,923,802	I 35, 2.6 MI S CSAH 4 TO N END BR OVER TH-210, MEDIUM MILL/ OVERLAY
105	CHIP	6930-XXX	MN73	2025	$1,220,026	MN 73, NB AND SB, IN CHISHOLM, NORTH JCT US 169 TO 4TH STREET, MEDIUM MILL/OVERLAY
106	CHIP	3601-XXX	MN1	2028	$183,546	MN 1, N JCT US 71/NORTHOME TO N JCT MN 46/ NORTHOME, MEDIUM MILL/OVERLAY
107	CHIP	3606-XXX	MN11	2026	$1,113,747	MN 11, 0.8 MI E. WEST ISLAND VIEW RD TO END OF TH11, MEDIUM MILL/ OVERLAY
108	CHIP	3605-XXX	MN11	2025	$328,544	MN 11, IN INTERNATIONAL FALLS, 12th AV to 6TH AVE W, MEDIUM MILL/OVERLAY
109	CHIP	6917-140	US53	2023	$2,000,000	US 53 NB ONLY, AC PROJECT, 1.3MI NJCT CSAH-47 SWAN LAKE RD. TO 0>1 M S JCT CEMETERY RD. RECLAIM
110	CHIP	3806	MN61	2028	$1,158,850	MN 61, 1.3 MI N. of CSAH 22 to Mary Street, MEDIUM MILL/OVERLAY
111	CHIP	0121-xxx, 0914-XXX	MN210	2026	$10,733,282	MN 210, FROM 0.3 MI E of E JCT MN 65 TO JCT MN 73, MEDIUM MILL/OVERLAY

ID	Program	Project Number	Route or Location	Year	Cost	Description
112	CHIP	0906-XXX	MN33	2025	$461,774	MN 33, IN CLOQUET, CLOQUET AVE TO BR. 09008, MEDIUM MILL/OVERLAY
113	CHIP	6925-XXX	MN61	2024	$3,764,328	MN 61, NB AND SB, IN DULUTH, 28TH AVENUE EAST TO 40TH AVENUE EAST, MEDIUM MILL/OVERLAY
114	CHIP	0910-XXX	MN45	2026	$1,226,456	MN 45, JCT TH 210 TO I-35, MEDIUM MILL/ OVERLAY
115	CHIP	0111-XXX	MN65	2023	$5,102,057	MN 65, 0.1 MILE NORTH OF CSAH 4 (DAM LAKE STREET) TO NORTH JCT MN 27, MEDIUM MILL/OVERLAY
116	CHIP	6911-XXX	MN33	2028	$7,174,080	MN 33, BR. 69113/69114 TO JCT TH 53, MEDIUM MILL/OVERLAY
117	CHIP	3604-XXX	MN11	2028	$536,905	MN 11, 0.26 MI W BR AT McCLOUD CR TO 0.83 MI W CSAH-4, MEDIUM MILL/OVERLAY
118	CHIP	6911-XXX	MN33	2026	$3,226,926	MN 33, 1.5 MI S. OF TH 2 TO BR. 69113/69114, MEDIUM MILL/ OVERLAY
119	CHIP	6935-XXX	US169	2024	$4,329,436	US 169, SB, 0.3 MILE SOUTH OF CSAH 5 TO 0.3 MILE WEST OF CR 109, MEDIUM MILL/OVERLAY
120	CHIP	0916-XXX, 0910-XXX	MN210	2028	$2,992,081	MN 210, END 4 LN TO STATE PARK RD, MEDIUM MILL/OVERLAY
121	CHIP	3604-XXX	MN11	2028	$692,641	MN 11, 0.11 MI W UT-129 TO 0.3 MI E FRONTIER, MEDIUM MILL/OVERLAY
122	CHIP	6980-XXX	I535	2024	$300,000	I535, APPROACHES TO GARFIELD AVE INTERCHANGE, CPR
123	CHIP	3805-XXX	MN61	2027	$670,110	MN 61, FROM 0.3 MI S SILVER CREEK TUNNEL TO 0.4 MI N SILVER CREEK TUNNEL, CRP PAVEMENT REHAB
124	CHIP	6913-XXX	MN135	2024	$6,045,402	MN 135, 0.3 MILE NORTH OF THE EMBARRASS RIVER TO JCT MN 1, MEDIUM MILL/OVERLAY
125	CHIP	6917-XXX	US53	2028	$1,897,989	US 53 NB, 1.1 MI S. CSAH 52 to BR.69019, MEDIUM MILL/OVERLAY
126	CHIP	6917-XXX	US53	2027	$2,544,707	US 53 SB, FROM 1.3 MI N JCT TH 33 to 1.3 MI N TH 33, MEDIUM MILL/OVERLAY
127	CHIP	6934-XXX	US169	2028	$4,071,630	US 169, W. JCT TH 73 TO Howard Street, MEDIUM MILL/OVERLAY
128	CHIP	3107-XXX	MN6	2027	$4,546,768	MN 6, 0.9 MI N.TH 286 TO S JCT MN 1, MEDIUM MILL/ OVERLAY
129	CHIP	6902-XXX	MN1	2026	$6,896,003	MN 1, FROM S. JCT TH 53 TO W JCT MN 169, MEDIUM MILL/ OVERLAY
130	CHIP	0980-XXX	I35	2024	$5,573,930	I 35 SB, FROM NORTH END OF BRIDGE OVER MN 210 TO NORTH END OF BRIDGE OVER THE ST. LOUIS RIVER, RECLAIM
131	CHIP	5812-XXX	MN107	2026	$4,514,634	MN 107, KANABEC/PINE CO LN TO JCT MN 23, MEDIUM MILL/OVERLAY
132	CHIP	0116-XXX	US169	2024	$7,354,401	US 169, MISSISSIPPI RIVER to CSAH 18, MEDIUM MILL/OVERLAY
133	CHIP	6910-XXX	MN23	2023	$1,657,645	MN 23, IN DULUTH. 0.1 MILE NORTHEAST OF 130TH AVENUE TO 1.3 MILES NORTH OF MN 39, MEDIUM MILL/OVERLAY

ID	Program	Project Number	Route or Location	Year	Cost	Description
134	CHIP	"0905-XXX,	MN33	2025	$1,067,511	"MN 33, IN CLOQUET, DODDRIDGE AVENUE TO CLOQUET AVENUE, RECLAIM
135	CHIP	0906-XXX"	MN18	2028	$948,596	"
136	CHIP	5808-XXX	I35	2024	$5,250,000	MN 18, FINLAYSON TO JCT CSAH-61, MEDIUM MILL/OVERLAY
137	CHIP	6982-XXX	MN61	2027	$2,094,633	I-35, NB AND SB, IN DULUTH, LAKE AVENUE TO MN 61, MAJOR CPR AND GRIND
138	CHIP	1602-XXX	MN61	2025	$4,520,000	MN 61, 1.3 MILES SOUTH OF CUTFACE CREEK TO 0.1 MILE SOUTH OF UT 89, RECLAIM
139	CHIP	6925-XXX	MN61	2028	$300,000	MN 61, IN DULUTH, 40TH AV E. to 60TH AV E., MEDIUM MILL/ OVERLAY
140	CHIP	6925	MN1	2028	$1,572,604	MN 61, FROM 60th AVE E. TO .1 MI N. BRIGHTON BEACH RD, MEDIUM MILL/OVERLAY
141	CHIP	3601	MN46	2027	$17,243,573	MN 1, BELTRAMI-KOOCH CL TO S JCT US 71, MEDIUM MILL/OVERLAY
142	CHIP	3109-XXX	MN61	2024	$2,272,437	MN 46, 0.1 MI N. CSAH 39 TO JCT MN 1/ CSAH 40, MEDIUM MILL/ OVERLAY
143	CHIP	6926-XXX	MN1	2023	$3,576,460	MN 61, NB, CSAH 33 (MCQUADE ROAD) TO CSAH 42 (HOMESTEAD ROAD), MEDIUM MILL/OVERLAY
144	CHIP	3101-XXX	MN61	2028	$610,152	MN1 FROM 0.1 MI S.T-551, Thisthledew Lake CAMPGROUND RD TO E. JCT MN 65, MEDIUM MILL/OVERLAY
145	CHIP	6925-XXX	US2	2026	$1,541,243	MN 61, 0.1 MI N BRIGHTON BEACH RD TO 0.2 MI N SUPERIOR ST, MEDIUM MILL/OVERLAY
146	CHIP	3102-XXX	MN194	2024	$6,283,105	US 2, EAST END OF BR# 5760 TO CSAH 18, MEDIUM MILL/OVERLAY
147	CHIP	6933-XXX	MN38	2025	$2,785,692	MN 194, NB AND SB, IN DULUTH, EAST JCT OF US 53 (TRINITY ROAD) TO 200 FEET NORTH OF MESABA AVENUE, MEDIUM MILL/OVERLAY
148	CHIP	3108-XXX	MN48	2028	$1,168,432	MN 38, 0.2 MILE NORTH OF CSAH-49 TO CSAH 19, MEDIUM MILL/OVERLAY
149	CHIP	0912-XXX	MN1	2026	$11,044,732	MN 73, W JCT TH 27 TO 3RD AVE, MEDIUM MILL/OVERLAY
150	CHIP	3602-XXX	MN73	2025	$15,242,058	MN1, FROM 0.1 MI E OF 5TH ST TO JCT MN 6, MEDIUM MILL/OVERLAY
151	CHIP	6930-XXX	MN48	2028	$3,721,459	MN 73, NFD 111 TO MN 1, RECLAIM
152	CHIP	5804-XXX	MN1	2023	$1,385,203	MN 48, 0.335 MI E OF I-35 TO CSAH 21, MEDIUM MILL/OVERLAY
153	CHIP	6903-XXX, 6904-XXX	MN73	2026	$50,000	MN 1, WEST JCT MN 169 TO CEDAR STREET IN TOWER, MEDIUM MILL/OVERLAY
154	CHIP	6930-XXX	MN61	2024	$2,228,248	MN 73, 4TH ST CHISHOLM, MEDIUM MILL/ OVERLAY (ONE BLOCK CONCRETE CPR)
155	CHIP	6926-XXX	US53	2028	$2,002,596	MN 61, SB, CSAH 33 (MCQUADE ROAD) TO KNIFE RIVER, MEDIUM MILL/OVERLAY
156	CHIP	6917-XXX	US53	2027	$1,722,486	US 53, N. JCT TH 37 TO JCT VERMILLION DR , MEDIUM MILL / OVERLAY
157	CHIP	6915-XXX	MN200	2024	$10,978,015	US 53, 0.2 MI N PIEDMONT AVE TO 0.1 MI S MALL DR, MEDIUM MILL/OVERLAY
158	CHIP	0105-XXX	MN47	2028	$5,687,626	MN 200, CASS-AITKIN COUNTY LINE TO 0.2 MILE SOUTH OF JCT US 169, MEDIUM

ID	Program	Project Number	Route or Location	Year	Cost	Description
						MILL/OVERLAY
159	CHIP	0108-XXX	MN11	2028	$428,755	MN 47, T-81 TO JCT US 169, MEDIUM MILL/OVERLAY
160	CHIP	3604-XXX	US169	2025	$3,053,907	MN 11, 200' EOF CR-83E TO 1 MI E OF CR-83, MEDIUM MILL/OVERLAY
161	STIP	0901-62	MN23	2019	$480,000	Replace the bridge under the SOO Line Railroad 10.7 miles north of the south Carlton County line
162	STIP	0901-70	MN23	2019	$3,700,000	Replace the bridge 9.5 miles northeast of the south Carlton County line at Deer Creek
163	STIP	6982-331	I35	2019	$1,500,000	I 35 in Duluth, repair Lake Ave bridge and pedestrian improvements.
164	STIP	6917-143	US53	2019	$4,400,000	Resurface the northbound lanes of the highway from the north end of the Pale Face River to 0.35 miles south of County Road 93 and on the southbound lanes of the highway from Metske Road to South Moon Lake Drive in St. Louis County
165	STIP	6917-145	US53	2019	$2,800,000	Grade and resurface the highway at the CN Railroad bridge and remove the trail bridge at mile post 58 in St. Louis County
166	STIP	6917-145	US53	2019	$2,800,000	Grade and resurface the highway at the CN Railroad bridge and remove the trail bridge at mile post 58 in St. Louis County
167	STIP	1602-50	MN61	2019	$7,100,000	Resurface and reconstruct the highway from 1.8 miles north of the Cutface Creek to 0.1 miles south of County Road 14 and replace the box culvert at the Fall River in Grand Marais in Cook County
168	STIP	1602-50	MN61	2019	$7,100,000	Resurface and reconstruct the highway from 1.8 miles north of the Cutface Creek to 0.1 miles south of County Road 14 and replace the box culvert at the Fall River in Grand Marais in Cook County
169	STIP	6929-20	MN73	2019	$1,400,000	Reconstruct the bridge 2.5 miles south of the junction of Highway 169, over the Burlington Northern Santa Fe Railroad in St. Louis County
170	STIP	6912-77	MN135	2019	$8,250,000	Resurface the highway, install sidewalks and pedestrian ramps from 0.5 miles east of the Highway 53 junction to 0.58 miles south of County Road 21 in St. Louis County
171	STIP	6912-77	MN135	2019	$8,250,000	Resurface the highway, install sidewalks and pedestrian ramps from 0.5 miles east of the Highway 53 junction to 0.58 miles south of County Road 21 in St. Louis County
172	STIP	6912-77	MN135	2019	$8,250,000	Resurface the highway, install sidewalks and pedestrian ramps from 0.5 miles east of the Highway 53 junction to 0.58 miles south of County Road 21 in St. Louis County
173	STIP	3802-22	MN1	2020	$2,200,000	Replace the Stoney River Bridge and grade the approaches near County Road 2 in Lake County
174	STIP	3107-49M	MN6	2020	$2,136,000	Resurface the highway from Highway 2 to County Road 128 in Deer River

ID	Program	Project Number	Route or Location	Year	Cost	Description
175	STIP	3107-53M	MN6	2020	$890,000	Replace the bridge 4.5 miles north of Deer River and the bridge over Little Too Much Lake 23.2 miles north of Deer River in Itasca County
176	STIP	0102-25M	MN18	2020	$1,380,000	Replace the bridge over Morman Creek and stream on Hwy 47 in Aitkin County
177	STIP	0102-25M	MN18	2020	$1,380,000	Replace the bridge over Morman Creek and stream on Hwy 47 in Aitkin County
178	STIP	3805-79	MN61	2020	$4,050,000	Realign and replace the Silver Creek Bridge and approaches in Lake County
179	STIP	3805-99	MN61	2020	$6,850,000	Reconstruct the Stewart River Bridge and approaches 2.2 miles northeast of the junction of County Road 2 in Lake County
180	STIP	3805-106	MN61	2020	$1,900,000	Safety Improvements, LED lighting Silver Cliff and Lafayette Tunnel & in Duluth i-35 tunnels
181	STIP	3805-106	MN61	2020	$1,900,000	Safety Improvements, LED lighting Silver Cliff and Lafayette Tunnel & in Duluth i-35 tunnels
182	STIP	6929-21	MN73	2020	$1,200,000	Replace or reconstruct the bridge over the West Swan River and approach grading in St. Louis County
183	STIP	6981-9030L	I535	2020	$4,550,000	Painting the Blatnik Bridge between Duluth and Superior over the St. Louis River in St. Louis County
184	STIP	5813-01	MN48	2021	$300,000	Repair bridge over St Croix River on Highway 48
185	STIP	6918-90	US53	2021	$4,050,000	Bridge replacements at 6th Ave West in Virginia
186	STIP	6918-90	US53	2021	$4,050,000	Bridge replacements at 6th Ave West in Virginia
187	STIP	0120-25	MN210	2021	$500,000	Replace bridge
188	STIP	0914-12	MN210	2021	$667,000	Bridge replacement over Tamarack River in Wright.
189	STIP	0910-33	MN210	2021	$1,300,000	Bridge repairs over BNSF railroad
190	STIP	5807-30	MN23	2022	$3,000,000	Replace Bridge over Interstate 35
191	STIP	3808-38	MN61	2022	$1,050,000	Bridge repair
192	STIP	5814-06	MN70	2022	$475,000	Repair bridge over St Croix River on Highway 48
193	STIP	0119-30	MN210	2022	$7,500,000	In Duluth, on Interstate 35, reconstruct interchange.
194	STIP	6982-322CMG1	I35	2019	$13,000,000	Resurface the highway from the east junction of Highway 65 to the north junction of Highway 53 in Itasca County
195	STIP	3101-37	MN1	2020	$8,000,000	Resurface highway from County Highway 8 to State Highway 71
196	STIP	3609-41	MN65	2021	$4,200,000	Resurface the northbound lanes of the highway from the north end of the Pale Face River to 0.35 miles south of County Road 93 and on the southbound lanes of the

ID	Program	Project Number	Route or Location	Year	Cost	Description
						highway from Metske Road to South Moon Lake Drive in St. Louis County
197	STIP	6917-143	US53	2019	$4,400,000	Resurface the highway in various locations near Floodwood in St. Louis County
198	STIP	6928-28	MN73	2019	$8,500,000	Safety improvements on Highway 169 and County rd 137
199	STIP	6935-93	US169	2022	$400,000	In Duluth, on Interstate 35, reconstruct interchange.
200	STIP	6982-322WP2	I35	2020	$80,000,000	Highway 2 resurface pavement Ball Club Area
201	STIP	3102-50M	US2	2022	$800,000	Resurface highway from State Highway 53 to State Highway 135 thru Gilbert.
202	STIP	6914-19	MN37	2021	$4,500,000	Resurface the highway from the junction of Highway 1 to the junction of Highway 53 in St. Louis County
203	STIP	6931-01	MN73	2020	$1,300,000	In Duluth, on Interstate 35, reconstruct interchange.
204	STIP	6982-322WP3	I35	2021	$169,800,000	Reconstruct Bridges and access into the Duluth Port
205	STIP	6982-328WP1	I35	2019	$3,633,333	Resurface and reconstruct the highway and drainage improvements in Cromwell in Carlton County
206	STIP	0915-32	MN210	2020	$1,800,000	
207	STIP	0119-30	MN210	2022	$7,500,000	In Duluth, on Interstate 35, reconstruct interchange.
208	STIP	6982-322CMG4	I35	2022	$1,700,000	Reconstruct Bridges and access into the Duluth Port
209	STIP	6982-328NWP1	I35	2019	$266,667	Resurface the highway from the junction of Hidden Valley Road to the junction of County Road 18 Power Dam Road in Lake County
210	STIP	3809-09	MN169	2020	$1,800,000	Resurface the highway from 0.14 miles south of County Road 2 to the north junction of Highway 27 in Aitkin County
211	STIP	0110-32	MN65	2019	$1,461,337	Resurface the highway from 0.7 miles south of the south junction of Highway 200 to the south junction of Highway 169 in Itasca County
212	STIP	3111-30	MN65	2020	$8,316,740	Resurface highway from .4 mi. E. Prairie River to highway 200
213	STIP	3104-60	US2	2022	$17,900,000	Culvert improvements at Gegebic Creek in Duluth
214	STIP	6910-103	MN23	2021	$1,100,000	Resurface highway from N. jct Highway 1 to .5 mi. s. County highway 8
215	STIP	3609-42	MN65	2022	$12,400,000	Intersection safety improvements at Highway 53 and County Rd 95
216	STIP	6917-147	US53	2021	$200,000	Culvert improvements at US Steel Creek in Duluth
217	STIP	6910-102	MN23	2021	$1,100,000	In Duluth, on Interstate 35, reconstruct interchange.

ID	Program	Project Number	Route or Location	Year	Cost	Description
218	STIP	6982-322CMG3	I35	2021	$1,700,000	Drainage System improvement at Lakewalk in Duluth
219	STIP	6982-324	I35	2021	$1,100,000	Resurface highway from highway 18 the main st in Askov
220	STIP	5809-16	MN23	2022	$3,700,000	Realign and replace the Silver Creek Bridge and approaches in Lake County
221	STIP	3805-79	MN61	2020	$4,050,000	Resurface Highway Northbound only from 1.3 m. n. Swan Lake Rd to .1 mi. s. Cemetery Rd
222	STIP	6917-140	US53	2022	$5,900,000	Signage Replacement
223	STIP	8821-296	MN61	2019	$1,000,000	Resurface highway from Reservation Bay Rd. to US/Canadian border.
224	STIP	1604-45	MN61	2021	$12,800,000	Install traffic control devices from just east of Grand Marais to the Canadian Border in Cook County
225	STIP	1603-52	MN61	2020	$400,000	Resurface highway from Cemetery Rd to 305th lane
226	STIP	0108-29M	MN47	2022	$3,300,000	Resurface the highway in Northome
227	STIP	3602-26M	MN1	2019	$950,000	Resurface the highway from 0.9 miles north of the junction of Highway 53 to 0.17 miles south of County Road 26 in St. Louis County
228	STIP	6936-19	MN169	2020	$6,100,000	Resurface the highway from the junction of Crescent Drive to the junction of 4th Street and on Highway 11 from the east junction of Highway 71 to the east junction of Highway 53 in International Falls in Koochiching County
229	STIP	3608-48	US53	2020	$5,000,000	Grade and resurface the highway at the CN Railroad bridge and remove the trail bridge at mile post 58 in St. Louis County
230	STIP	6917-145	US53	2019	$2,800,000	In Duluth Drainage and fencing improvements
231	STIP	6982-319	I35	2021	$200,000	Resurface and reconstruct the highway from the Beltrami/Itasca County line to the Itasca/Koochiching County line in Itasca County
232	STIP	"3114-55M	US71	2019	$2,400,000	Reconstruct and drainage improvements for the highway from the junction of Highway 23 to the north end of the Oliver Bridge in Duluth in St. Louis County
233	STIP	"	MN39	2019	$1,800,000	Resurface highway from State Highway 65 to Aitkin/Carlton County Line and Shoulder Safety Improvements along Highway 27
234	STIP	6941-08	MN27	2021	$5,600,000	Intersection Safety Improvements at Highway 169 and Highway 65
235	STIP	0104-06	US169	2020	$400,000	Safety improvements on Highway 37 and County Rd 7
236	STIP	3116-149	MN37	2022	$1,000,000	Resurface the highway from 1.6 miles north of County Road 136 to 0.9 miles north of Highway 286 in Itasca County

ID	Program	Project Number	Route or Location	Year	Cost	Description
237	STIP	6947-55	MN6	2020	$2,610,000	Intersection improvements and turn lanes
238	STIP	3107-51M	MN210	2022	$6,500,000	Upgrade fiber optic cable and traffic cameras in Duluth.
239	STIP	0119-30M	I35	2021	$425,000	Highway 53/194 Intersection Safety Improvements
240	STIP	6982-327	US53	2022	$750,000	Resurface and reconstruct the highway from 1.8 miles north of the Cutface Creek to 0.1 miles south of County Road 14 and replace the box culvert at the Fall River in Grand Marais in Cook County
241	STIP	6916-113	MN61	2019	$7,100,000	
242	STIP	1602-50	US169	2022	$7,500,000	Safety improvements in City of Virginia
243	STIP	0119-30	US53	2020	$600,000	Roadway improvement on Hwy 210 between Deerwood & Aitkin
244	STIP	6918-94	MN210	2022	$1,750,000	reconstruct pavement, new curb & gutter, utilities and accessibility improvements
245	STIP	0118-22M	MN135	2019	$2,200,000	Resurface the highway from the junction of Hidden Valley Road to the junction of County Road 18 Power Dam Road in Lake County
246	STIP	6912-79	MN169	2020	$1,800,000	Repair the appurtenances at the Carlton Weight Inspection pull-off site and install signs on the mainline on the north side of Interstate 35, 0.21 miles north of Highway 61
247	STIP	3809-09	I35	2020	$1,500,000	Resurface highway, drainage improvements & pedestrian access improvements in Sandstone.
248	STIP	0980-152	MN123	2021	$3,400,000	Resurface the highway from 1.4 miles south of the Sandy River to 0.07 miles south of south junction of Highway 200 in Aitkin County
249	STIP	5802-24	MN65	2019	$5,700,000	Safety Improvements, LED lighting Silver Cliff and Lafayette Tunnel & in Duluth i-35 tunnels
250	STIP	0112-52	MN61	2020	$1,900,000	Resurface Highway from .1 Mi N Knife River to .3 mi. s County Highway 61
251	STIP	3805-106	MN61	2022	$5,500,000	Resurface highway from N. Bass Lake Rd to .7 mi. S County Rd 550
252	STIP	3804-61	MN1	2022	$3,600,000	Repair the Gooseberry Falls Rest Area in Lake County
253	STIP	3101-38	MN61	2019	$1,500,000	Center Median safety Improvements on Highway 53 between Eveleth and Virginia
254	STIP	3805-105	US53	2021	$850,000	Resurface the highway from 0.24 miles north of the junction of Highway 1 and the junction of Highway 71 in Koochiching County
255	STIP	6918-95	MN6	2019	$5,800,000	Resurface highway from Cass/Itasca County line to State Highway 2 West of Cohasset
256	STIP	3603-14	MN6	2021	$5,900,000	In Duluth, on Interstate 35, reconstruct interchange.
257	STIP	3106-24M	I35	2020	$5,800,000	Reconstruct pavement
258	STIP	6982-	I35	2022	$13,000,000	Resurface the highway from Highway 2 to County Road 128 in Deer River

ID	Program	Project Number	Route or Location	Year	Cost	Description
		322CMG2				
259	STIP	6982-318	MN6	2020	$2,136,000	Resurface highway from Highway 2 to highway 53
260	STIP	3107-49M	MN194	2022	$3,950,000	Resurface the highway, install sidewalks and pedestrian ramps from 0.5 miles east of the Highway 53 junction to 0.58 miles south of County Road 21 in St. Louis County
261	STIP	6932-14	MN135	2019	$8,250,000	Highway 53 safety improvements from Angora to 5 mi. North of Ray
262	STIP	6912-77	US53	2019	$3,630,000	Reconstruct Bridges and access into the Duluth Port
263	STIP	6920-53	I35	2019	$1,700,000	In Duluth, on Interstate 35, reconstruct interchange.
264	Aitkin			2021	$390,000	**CSAH 14 Bridge Replacement
265	Aitkin			2019	$168,700	**S.A.P. 001-605-013 - CSAH 5 Bridge (Culvert) Replacement
266	Aitkin			2023	$380,000	CR 54 Bridge Replacement
267	Aitkin			2022	$700,000	CR 62 Bridge Replacement
268	Aitkin			2022	$300,000	CSAH 1 Bridge Rehabilitation
269	Aitkin			2022	$3,400,000	CSAH 11 Widening/Resurfacing/Bridge Replacement
270	Aitkin			2021	$540,000	CSAH 12 Bridge Replacement
271	Aitkin			2022	$960,000	CSAH 18 Bridge Replacement
272	Aitkin			2023	$510,000	CSAH 5 Bridge Replacement
273	Aitkin			2019	$200,000	**C.P. 001-076-001 -CR 76 Culvert Replacements
274	Aitkin			2020	$130,000	CSAH 9 Resurfacing
275	Aitkin			2020	$800,000	**CSAH 27 Gravel Road Improvement
276	Aitkin			2021	$830,000	CSAH 40 Resurfacing
277	Aitkin			2019	$1,425,000	**S.A.P. 001-616-007 - CSAH 16 Pavement Resurfacing
278	Aitkin			2021	$1,200,000	CSAH 17 Resurfacing
279	Aitkin			2021	$450,000	CR 62 Resurfacing
280	Aitkin			2020	$180,000	CR 70 Resurfacing
281	Aitkin			2023	$2,500,000	CSAH 5 Reconstruction (Grading and Agg. Base)
282	Aitkin			2022	$3,400,000	CSAH 11 Widening/Resurfacing/Bridge Replacement
283	Aitkin			2019	$1,485,000	**S.A.P. 001-625-001 - CSAH 25 Reconstruction (Grading and Agg. Base)
284	Aitkin			2021	$600,000	CSAH 31 Resurfacing
285	Aitkin			2021	$170,000	CR 77W Resurfacing

ID	Program	Project Number	Route or Location	Year	Cost	Description
286	Aitkin			2020	$80,000	CR 79 Resurfacing
287	Aitkin			2020	$400,000	CSAH 10 Resurfacing
288	Aitkin			2019	$3,200,000	**S.A.P. 001-603-018 - CSAH 3 Reconstruction
289	Aitkin			2020	$680,000	CSAH 3 Resurfacing
290	Pine			2020		Bridge (Co Ditch #12, CR 148)
291	Pine			2021		Bridge over Grindstone River (CR 140)
292	Pine			2018		Bridge over Hay Creek (CSAH 32)
293	Pine			2019		Bridge over Kettle River (CSAH 52)
294	Pine			2021		Bridge over Lower Tamarack River (CSAH 25)
295	Pine			2020		Bridge over Moose Horn River (CSAH 46)
296	Pine			2020		Bridge over North Fork Grindstone River (CSAH 27)
297	Pine			2019		Bridge over Pine River (CR 150)
298	Pine			2018		Bridge over Willow River (CSAH 61)
299	Pine			2019		Bridge over Wolf Creek (CSAH 30)
300	Pine	284000		2021		Mill/Overlay (CSAH 61)
301	Pine	284000		2022		Mill/Overlay (CSAH 61)
302	Pine	34502		2021		Mill/Overlay (CSAH 7)
303	Pine	101392		2019		Paving (CSAH 52)
304	Pine	202331		2022		Reclamation (CSAH 17)
305	Pine	67840		2022		Reclamation (CSAH 3)
306	Pine	135168		2022		Reclamation (CSAH 34)
307	Pine	202339		2021		Reclamation (CSAH 36)
308	Pine	34507		2021		Reclamation (CSAH 37)
309	Pine	135169		2021		Reclamation (CSAH 38)
310	Pine	270846		2020		Reclamation (CSAH 70)
311	Pine	274050		2023		Reconstruction (CSAH 9)
312	Pine	135165		2020		Resurfacing
313	Pine	170104		2018		Resurfacing
314	Pine	34512		2018		Resurfacing

ID	Program	Project Number	Route or Location	Year	Cost	Description
315	Pine	2241		2018		Resurfacing
316	Pine	69430		2018		Resurfacing
317	Pine	135159		2021		Resurfacing (CSAH 14)
318	Pine	237560		2022		Resurfacing (CSAH 140)
319	Pine	135162		2022		Resurfacing (CSAH 18)
320	Pine	558		2020		Resurfacing (CSAH 22)
321	Pine	202334		2023		Resurfacing (CSAH 27)
322	Pine	168476		2020		Resurfacing (CSAH 32)
323	Pine	559		2020		Resurfacing (CSAH 35)
324	Pine	109307		2019		RR Crossing
325	Pine	555		2018		Trail/Turn Lanes
326	DSMIC	069-598-065	Bridge			Condition
327	DSMIC	118-157-023	Bridge			Condition
328	DSMIC	118-162-016/118-163-004	Bridge			Condition
329	DSMIC	18-600-001	Bridge			Performance
330	DSMIC	3804-61	Bridge			Safety
331	DSMIC	6910-102	Bridge			Condition
332	DSMIC	6910-103	Bridge			Condition
333	DSMIC	6926-53	Bridge			Condition
334	DSMIC	6982-319	Bridge			Other
335	DSMIC	6982-324	Bridge			Condition
336	DSMIC	6982-325	Bridge			Condition
337	DSMIC	069-070-038 / 6916-109	Road			Safety
338	DSMIC	069-606-025	Road			Condition
339	DSMIC	069-609-047	Road			Safety

ID	Program	Project Number	Route or Location	Year	Cost	Description
340	DSMIC	069-637-025	Road			Safety
341	DSMIC	069-643-017	Road			Condition
342	DSMIC	069-656-018	Road			Condition
343	DSMIC	118-080-063	Road			Condition
344	DSMIC	118-090-018	Road			Other
345	DSMIC	118-090-019	Road			Other
346	DSMIC	118-090-024	Road			Other
347	DSMIC	118-118-005	Road			Condition
348	DSMIC	118-126-022	Road			Condition
349	DSMIC	118-160-024	Road			Condition
350	DSMIC	118-178-006	Road			Condition
351	DSMIC	3804-61	Road			Safety
352	DSMIC	3805-106	Road			Safety
353	DSMIC	6932-14	Road			Safety
354	DSMIC	6941-08	Road			Condition
355	DSMIC	6981-9030L	Road			Other
356	DSMIC	6982-318	Road			Condition
357	DSMIC	6982-327	Road			Other
358	DSMIC	8821-311	Road			Condition
337	DSMIC	069-070-038 / 6916-109	Road			Safety
338	DSMIC	069-606-025	Road			Condition
339	DSMIC	069-609-047	Road			Safety
340	DSMIC	069-637-025	Road			Safety
341	DSMIC	069-643-017	Road			Condition
342	DSMIC	069-656-018	Road			Condition
343	DSMIC	118-080-063	Road			Condition
344	DSMIC	118-090-018	Road			Other
345	DSMIC	118-090-019	Road			Other

ID	Program	Project Number	Route or Location	Year	Cost	Description
346	DSMIC	118-090-024	Road			Other
347	DSMIC	118-118-005	Road			Condition
348	DSMIC	118-126-022	Road			Condition
349	DSMIC	118-160-024	Road			Condition
350	DSMIC	118-178-006	Road			Condition
351	DSMIC	3804-61	Road			Safety
352	DSMIC	3805-106	Road			Safety
353	DSMIC	6932-14	Road			Safety
354	DSMIC	6941-08	Road			Condition
355	DSMIC	6981-9030L	Road			Other
356	DSMIC	6982-318	Road			Condition
357	DSMIC	6982-327	Road			Other
358	DSMIC	8821-311	Road			Condition

Appendix D – Potential Gaps to Address

This appendix contains a list of the location-specific needs and issues that do not appear to be address by any currently programmed projects. Similar to the lists provided in Appendix A and B, the fields in the table below are:

- **ID:** This code refers to the need/issue ID printed on maps in this Working Paper. Those that begin with an "S" were stakeholder-identified, and those with a "D" were identified via data analysis.
- **Source:** the source used to identify the need or issue.
- **Type:** Intersection or Segment of highway.
- **Highway** Name or Number
- **Need/Issue Type:** this field corresponds to the primary need or issue associated with the location. Needs and issues were coded in one of four ways: safety, condition, performance, or other.
- **Additional Information:** where available, additional details from the stakeholder were noted here

Figure D-1: Identified Needs and Issues not Explicitly Addressed by Funded Projects

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
D1	D1 Bridge Clearance/Condition Data	Intersection	CSAH 1	Cloquet	Condition	Bridge Condition Rating is <50%
D3	D1 Bridge Clearance/Condition Data	Intersection	CNTY 46	Grand Marais	Condition	Bridge Condition Rating is <50%
D4	D1 Bridge Clearance/Condition Data	Intersection	UT 8110	Cook	Condition	Bridge Condition Rating is <50%
D7	D1 Bridge Clearance/Condition Data	Intersection	CNTY 70	Little Fork	Condition	Bridge Condition Rating is <50%
D8	D1 Bridge Clearance/Condition Data	Intersection	Long Lake Rd	Markham	Condition	Bridge Condition Rating is <50%
D9	D1 Bridge Clearance/Condition Data	Intersection	UTWN 434	Trout Lake Township	Condition	Bridge Condition Rating is <50%
D10	D1 Bridge Clearance/Condition Data	Intersection	CNTY 438	Wawina Township	Condition	Bridge Condition Rating is <50%
D11	D1 Bridge Clearance/Condition Data	Intersection	UTWN 340	Gale Brook	Condition	Bridge Condition Rating is <50%
D12	D1 Bridge Clearance/Condition Data	Intersection	CNTY 336	Prairie River	Condition	Bridge Condition Rating is <50%
D13	D1 Bridge Clearance/Condition Data	Intersection	PITZEN RD	Big Fork	Condition	Bridge Condition Rating is <50%
D14	D1 Bridge Clearance/Condition Data	Intersection	UTWN 446	Trout Lake Township	Condition	Bridge Condition Rating is <50%
D15	D1 Bridge Clearance/Condition Data	Intersection	CSAH 44	North Star Township	Condition	Bridge Condition Rating is <50%
D17	D1 Bridge Clearance/Condition Data	Intersection	CNTY 149	Bearville Township	Condition	Bridge Condition Rating is <50%
D18	D1 Bridge Clearance/Condition Data	Intersection	UT 8146	Ash Lake	Condition	Bridge Condition Rating is <50%
D19	D1 Bridge Clearance/Condition Data	Intersection	MUN 85	Duluth	Condition	Bridge Condition Rating is <50%
D20	D1 Bridge Clearance/Condition Data	Intersection	Wilton Rd	Brookston	Condition	Bridge Condition Rating is <50%
D23	D1 Bridge Clearance/Condition Data	Intersection	MUN 10	Cook	Condition	Bridge Condition Rating is <50%
D24	D1 Bridge Clearance/Condition	Intersection	TWNS 883	West Swan River	Condition	Bridge Condition Rating is <50%

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
	Data					
D26	D1 Bridge Clearance/Condition Data	Intersection	MUN 361	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D27	D1 Bridge Clearance/Condition Data	Intersection	STURGEON ISLAND RD	Sturgeon Lake	Performance	Vertical Bridge Clearance is <14.6'
D28	D1 Bridge Clearance/Condition Data	Intersection	CR 931	Sturgeon River	Performance	Vertical Bridge Clearance is <14.6'
D30	D1 Bridge Clearance/Condition Data	Intersection	MN 39	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D31	D1 Bridge Clearance/Condition Data	Intersection	MSAS 101	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D32	D1 Bridge Clearance/Condition Data	Intersection	32 AVE E	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D33	D1 Bridge Clearance/Condition Data	Intersection	36TH AVENUE E	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D34	D1 Bridge Clearance/Condition Data	Intersection	CSAH 80	Marble	Performance	Vertical Bridge Clearance is <14.6'
D35	D1 Bridge Clearance/Condition Data	Intersection	GARY ST	Marble	Performance	Vertical Bridge Clearance is <14.6'
D37	D1 Bridge Clearance/Condition Data	Intersection	CSAH 89	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D38	D1 Bridge Clearance/Condition Data	Intersection	MN 70	Rock Creek	Performance	Vertical Bridge Clearance is <14.6'
D39	D1 Bridge Clearance/Condition Data	Intersection	SUPERIOR ST	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D40	D1 Bridge Clearance/Condition Data	Intersection	MORRIS THOMAS RD	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D42	D1 Bridge Clearance/Condition Data	Intersection	US 2	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D43	D1 Bridge Clearance/Condition Data	Intersection	CSAH 61	Rock Creek	Performance	Vertical Bridge Clearance is <14.6'
D44	D1 Bridge Clearance/Condition Data	Intersection	IDAHO ST	Duluth	Performance	Vertical Bridge Clearance is <14.6'
D45	MnDOT At Grade Rail Crossings	Intersection	OLD CARLTON RD	Cloquet	Safety	Rail Risk Rating is >7
D46	MnDOT At Grade Rail Crossings	Intersection	N CLOQUET RD E	Carlton County	Safety	Rail Risk Rating is >7
D48	MnDOT At Grade Rail Crossings	Intersection	CSAH 7	Mountain Iron	Safety	Rail Risk Rating is >7

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
D49	MnDOT At Grade Rail Crossings	Intersection	MIDWAY RD	Saint Louis County	Safety	Rail Risk Rating is >7
D50	MnDOT At Grade Rail Crossings	Intersection	MNTH 37	Saint Louis County	Safety	Rail Risk Rating is >7
D51	MnDOT At Grade Rail Crossings	Intersection	FAYAL RD	Mountain Iron	Safety	Rail Risk Rating is >7
D52	MnDOT At Grade Rail Crossings	Intersection	MINERAL AVE	Mountain Iron	Safety	Rail Risk Rating is >7
D55	MnDOT At Grade Rail Crossings	Intersection	KLEIN RD	Kerrick	Safety	Rail Risk Rating is >7
D56	MnDOT At Grade Rail Crossings	Intersection	STARK RD	Saint Louis County	Safety	Rail Risk Rating is >7
D57	MnDOT At Grade Rail Crossings	Intersection	MAPLE GROVE RD	Saint Louis County	Safety	Rail Risk Rating is >7
D58	MnDOT At Grade Rail Crossings	Intersection	E HARNEY RD	Carlton County	Safety	Rail Risk Rating is >7
D59	MnDOT At Grade Rail Crossings	Intersection	DULUTH SAINT VINCENT RD	Saint Louis County	Safety	Rail Risk Rating is >7
D60	MnDOT At Grade Rail Crossings	Intersection	MAKI RD	Saint Louis County	Safety	Rail Risk Rating is >7
D61	MnDOT At Grade Rail Crossings	Intersection	3RD ST N	Brook Park	Safety	Rail Risk Rating is >7
D63	MnDOT At Grade Rail Crossings	Intersection	PINE ST	Bruno	Safety	Rail Risk Rating is >7
D64	MnDOT At Grade Rail Crossings	Intersection	CR145	Carlton County	Safety	Rail Risk Rating is >7
D65	MnDOT At Grade Rail Crossings	Intersection	INDEPENDENCE RD	Saint Louis County	Safety	Rail Risk Rating is >7
D66	MnDOT At Grade Rail Crossings	Intersection	NORWAY RIDGE RD	Saint Louis County	Safety	Rail Risk Rating is >7
D67	MnDOT At Grade Rail Crossings	Intersection	BIG ROCK RD	Lake County	Safety	Rail Risk Rating is >7
D68	MnDOT At Grade Rail Crossings	Intersection	RATIKA RD	Carlton County	Safety	Rail Risk Rating is >7
D69	MnDOT At Grade Rail Crossings	Intersection	MUNGER SHAW RD	Saint Louis County	Safety	Rail Risk Rating is >7
D71	MnDOT At Grade Rail Crossings	Intersection	BATCHELOR RD	Saint Louis County	Safety	Rail Risk Rating is >7
D72	MnDOT At Grade Rail Crossings	Intersection	MELRUDE RD	Saint Louis County	Safety	Rail Risk Rating is >7
D74	MnDOT At Grade Rail Crossing Incidents	Intersection	POKEGAMA AVE	Henriette	Safety	More than 2 accidents at this location between 2004 - 2013
D76	MnDOT At Grade Rail Crossing Incidents	Intersection	2ND AVE W	International Falls	Safety	More than 2 accidents at this location between 2004 - 2013
D82	MnDOT Highway Safety Data	Intersection	4TH ST NW	Grand Rapids	Safety	More than 2 accidents at this location

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
	(D1 Commercial Vehicle Crashes)					between 2016 - 2017
D83	MnDOT Highway Safety Data (D1 Commercial Vehicle Crashes)	Intersection	USTH 2	Itasca County	Safety	More than 2 accidents at this location between 2016 - 2017
D84	MnDOT Highway Safety Data (D1 Commercial Vehicle Crashes)	Intersection	EMERSON RD	Saint Louis County	Safety	More than 2 accidents at this location between 2016 - 2017
D86	MnDOT Highway Safety Data (D1 Commercial Vehicle Crashes)	Intersection	USTH 53	Saint Louis County	Safety	More than 2 accidents at this location between 2016 - 2017
DBY	CPCS Crash Density Analysis/Crash Factor Score	Segment	Central Ave	Nashwauk	Safety	Segment with high density crash rates
DCC	CPCS Crash Density Analysis/Crash Factor Score	Segment	CSAH 5	Chisolm (Heading South)	Safety	Segment with high density crash rates
DCH	CPCS Crash Density Analysis/Crash Factor Score	Segment	Miller Trunk Hwy	Eveleth (Heading South)	Safety	Segment with high density crash rates
DCJ	CPCS Crash Density Analysis/Crash Factor Score	Segment	Miller Trunk Hwy	Eveleth (Heading South)	Safety	Segment with high density crash rates
DCR	CPCS Crash Density Analysis/Crash Factor Score	Segment	MNTH 37	Hibbing (Heading East)	Safety	Segment with high density crash rates
DCW	CPCS Crash Density Analysis/Crash Factor Score	Segment	USTH 169	Swan Lake to Hibbing	Safety	Segment with high density crash rates
S5	D1 Action Items	Intersection	53	At business location (mile post 82.434)	Safety	Wants median crossover on TH 53 at his driveway
S8	D1 Action Items	Intersection	Co. Rd 70 & Scott Road	Babbitt	Safety	Finding Black Iron was difficult for interviewers and the owner said trucking companies have a hard time finding it, too. When pavement ends on Co Rd 70, there is no signage to indicate that you are still on Co. Rd. 70, or whether Scott Road is ahead. Scott Road isn't labeled so you only know from the Black Iron Rubber business sign at the end of the road to turn (but this is after North Shore

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
						Mining and many people turn around before getting there).
S10	D1 Action Items	Intersection	1-35	Bridge 09823 1-35 over Moose Horn River at Milepost 219.556	Safety	Requirements to occupy the center of two lanes and max speed of 10 mph on this bridge. He thinks it is dangerous to have high speed difference between permit restriction and posted speed limit.
S12	D1 Action Items	Intersection	Iron World Road and 169	Chisholm	Safety	You've got people pulling out of Iron World (actually called MN Discovery Center) or coming from McDonalds, onto 169 or crossing 169 to get across, and they can't see the cars coming from west because there's a hill and a curve. My son got into an accident there years ago. You're coming from Hibbing, coming up the hill and they don't see you as they try to cross the street or turn onto 169. I don't know if that intersection should even be there. I ride a motorcycle, and as I go on 169 that's the worst area, I don't know if people pulling onto 169 see me coming. The people coming on 169 have the right of way, they shouldn't have to worry about people pulling out in front of them. A fix? Eliminate the intersection. Poor sight distance at this intersection
S15	D1 Action Items	Intersection	Hwy 2/Cty Road 63	Corner of Hwy 2 and Cty Road 63	Condition	Washout of shoulder aggregate on corner of Highway 2 and Cty Rd. 63
S17	D1 Action Items	Intersection	2	Cty 2	Safety	Concerns with heavy traffic coming from north and cars going South waiting to turn left on Cty 2. Cars go around on the right to get by - sometimes very fast. Could use a bypass lane at this location (right in front of Stanley offices). Also, safety

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
						concern about crossing cty Rd. 2 by employees and forklifts. (Not sure what the problem is with crossing, though?)
S18	D1 Action Items	Intersection	61 and 2	Cty 2 and Hwy 61 intersection	Safety	Difficult to navigate Cty 2 and State Hwy 61 intersection with a semi-truck. Left turn signal and turn lane from NB 61 to Lake Cty 2 would be nice. Intersection is one of the worst in town. Large delays and congestion, traffic tries to sneak around - risk of accidents. Foot traffic is also present. ("T-bone central")
S24	D1 Action Items	Intersection	Martin Road & Rice Lake Rd	Duluth	Safety	With what seems to be an ever increasing amount of traffic the intersection of Rice Lake Rd. and Martin Rd, at the peak times of the day, traffic backs up causing delays for truck traffic to get to our facility. In some cases if weather is involved we have had delays of up to 40 minutes or more to get trucks to our location.
S25	D1 Action Items	Intersection	Airpark Blvd	Duluth	Safety	Getting onto Haines Rd from Airpark Blvd. Trucks often have to “gun it” to get onto Haines. There are frequent accidents at that intersection.
S26	D1 Action Items	Intersection	Airpark rd. and rice lake rd.	Duluth	Safety	Airpark rd. and rice lake rd. intersection is an issue… un controlled. Temporary stoplight would be beneficial. Manage the detour better.
S27	D1 Action Items	Intersection	I35 and 535	Duluth	Safety	I35 to 535 in Duluth –53 is going downhill and merges. It’s a tricky spot and hard to tell who has the right of way. In a truck it’s hard to see the traffic, and neither way has a yield sign.
S28	D1 Action Items	Intersection	Highway 37	Duluth	Condition	Hwy 37 railroad crossing large hump

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
						cars and trucks can bottom out
S32	D1 Action Items	Intersection	I35/Proctor exit	Duluth	Safety	However, the truck lane on I35 SB drops off as an exit for Proctor. Trucks then have to make last minute lane shift if staying on I35. Sometimes is not safe.
S33	D1 Action Items	Intersection	Pecan Avenue	Duluth	Safety	The bus stops are on both sides, people stand in center of the road. We need another turn lane and another pedestrian crossing.
S34	D1 Action Items	Intersection	Arlington Street	Duluth	Safety	The bus stops are on both sides, people stand in center of the road. We need another turn lane and another pedestrian crossing.
S35	D1 Action Items	Intersection	169	Fortune Bay Resort Casino	Safety	Very congested near casino and many crashes. He suggested either a new intersection or reduced speeds of 30 to 40 MPH in the area.
S37	D1 Action Items	Intersection	Highway 2.	Going downhill into	Safety	Would like advance warning signs for traffic lights going downhill into Adolph on Highway 2. Safer for drivers who know when to stop.
S38	D1 Action Items	Intersection	TH 2/2nd Ave NW	Grand Rapids	Safety	In 2008 MnDOT removed the signal at this intersection when th 2 was redone. Sometimes trucks accidently go that way when leaving blandin, and they can't get out into traffic.
S39	D1 Action Items	Intersection	TH 169/River Road	Grand Rapids	Safety	Signal was removed in 2012 when MnDOT reconstructed 169. Now there is a pedestrian crossing flashing sign. It doesn't work well – drivers don't stop for it. Also, since there isn't a signal there anymore, anybody leaving Bladin's headquarters building now takes back-roads down to 4th St S where a new signal is located, and enter Th 169 there. Not good.

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
S40	D1 Action Items	Intersection	Highway 2	Grand Rapids	Safety	They may have already put one there, but going west into town (Grand Rapids) on 2, the last stop on 63 – flasher would be helpful when coming out of the speed limit zone.
S42	D1 Action Items	Intersection	169	Hibbing	Safety	Mitchell Bridge (US 169, just east of Hibbing) – it's on a curve, sloped and curved, icy conditions can be dangerous.
S45	D1 Action Items	Intersection	41st St	Hibbing	Condition	Parking lot to 41st (frontage road) gets icy in the winter-can slip right out into road
S46	D1 Action Items	Intersection	Highway 5	Hibbing	Safety	Need a Trucks Hauling or entering sign on Hwy 5 within half mile of both sides of facility for entry.
S51	D1 Action Items	Intersection	Tilson Creek on Hwy.11	International Falls	Safety	Tilson Creek boat landing; it is posted at 40mph, but it should be 30 mph with flashers.
S52	D1 Action Items	Intersection	7 and 53	Intersections near Walmart (Hwy 7 and 53)	Safety	Intersections are congested (typically between 7-9:30 am, noon and 3-6:00 pm, and during shift changes at MnTAK). He thinks an intersection like the one on Arrowhead Road and Hwy 53 in Duluth might be better in these areas.
S53	D1 Action Items	Intersection	7 and 53	Intersections near Walmart (Hwy 169 and Mud Lake Road)	Safety	Intersections are congested (typically between 7-9:30 am, noon and 3-6:00 pm, and during shift changes at MnTAK). He thinks an intersection like the one on Arrowhead Road and Hwy 53 in Duluth might be better in these areas.
S54	D1 Action Items	Intersection	45	Kwik Trip in Cloquet	Safety	People coming from Carlton are turning into Kwik Trip, while other people are coming off the freeway to go to Holiday. There is only 12' for people to cross over. Additionally, there are semi shipments in and out of

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
						Kwik Trip. There is heavy traffic in this location even before the AM peak (5 AM).
S57	D1 Action Items	Intersection	TH 23	Munger Trail Bridge	Performance	TH 23 is tough for permitting when delivering to Duquette or Kerrick due to bridge restrictions. Munger Trail bridge = low clearance
S58	D1 Action Items	Intersection	169	Nashwauk	Safety	US-169 bridge near Nashwauk – seeing a lot of accidents. Always 4-5 cars involved. Is it the maintenance, the de-icing process? MN-65 and US-169, west entrance into Nashwauk. Once you're in the center median and want to go across, usually involves the left lane. Somebody coming from west, wants to make a left turn into Nashwauk, and colliding with someone going west on 169
S59	D1 Action Items	Intersection	53 Southbound	North of 169, Virginia	Safety	"Minntac closed an entrance causing backups on 53 to west 169. There are about 350 people coming and leaving at the 3:00 pm shift. It might be helpful to have a left turning lane for traffic coming from the north.
S60	D1 Action Items	Intersection	53	North of TH1 near KGM Contractors	Condition	Large bump; It would be helpful if it could be fixed
S62	D1 Action Items	Intersection	169, 47	On TH 169 SB movement onto TH 47.	Safety	Should have a bypass lane. Possible location for a round-about?
S63	D1 Action Items	Intersection	1-35, 45	On-off ramp at 45 and 1-35 (45 to 35S or 35N to 45)	Safety	This is a dangerous location. It is too short to get up to speed, especially for trucks and trailers. It is also difficult for large vehicles to get on and off of the ramp. It is a safety concern for the company, but there is no better alternate route for their trucks.
S64	D1 Action Items	Intersection	21	Sheridon St and	Safety	The signal at Sheridan and Central

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
				Central		should be a simple fix. If you're a block away from it the locals know they aren't going to get through. Just change the timing.
S65	D1 Action Items	Intersection	169	Six Mile Road	Safety	The school bus from Tower turns into Six Mile Road, then backs out onto Hwy. 169 to turn around. At the same time, the bus from Ely is returning. It is just a matter of time before they hit each other...The Six Mile Lake road BUS backing. Build a turn-around for the bus.
S67	D1 Action Items	Intersection		Swan Lake Road Bridge	Safety	Width of bridge too narrow and only one car can get through at a time causing shipping delays.
S68	D1 Action Items	Intersection	Highway 2 & 65	Swan River	Safety	There's a problem area at 2 and 65 in Swan River. There are a lot of terrible accidents there.
S71	D1 Action Items	Intersection	169/1/CR77	Tower	Safety	1) Verify intersection approach signing to reduce confusion for drivers 2) Verify sight distance for drivers trying to enter 169
S73	D1 Action Items	Intersection	HWY 53	Virginia	Safety	S.B. 53 entrance should have a left turn lane for entering traffic and an acceleration lane for heavy loads leaving facility. During Mittal shift change, many Mittal employees use the P and H road to access highway 53. It is very busy at 3:30. "Daytona"
S74	D1 Manufacturing Study	Intersection	HWY 5/HWY 169	Hibbing	Safety	Businesses suggested this location might benefit from an acceleration lane
S75	D1 Manufacturing Study	Intersection	HWY 71/KEENAN DR.	INTERNATIONAL FALLS	Safety	Timing of certain signals are not ideal for traffic flow
S76	D1 Manufacturing Study	Intersection	HWY 1/HWY 120	ELY	Safety	Respondents recommended turn lanes
S77	D1 Manufacturing Study	Intersection	HWY 2	SAGINAW	Performance	Bridge on Highway 2 between Highway 194 and Highway 33 in

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
						Saginaw is narrow and has low clearance
S78	D1 Manufacturing Study	Intersection	HWY 169	BUHL	Performance	Sherman Overpass west of Buhl on Highway 169 has low clearance
S80	Stakeholder Consultation	Intersection	HWY 53/LANDFILL ROAD	VIRGINIA	Safety	New intersection has trucks blocking traffic.
S84	Stakeholder Consultation	Intersection		TWO HARBORS	Safety	Scenic Hwy 61 and CN RR crossing north of Sonju Ford (south of Two Harbors) still lacks safety arms and this is a big hazard.
S997	Stakeholder Consultation	Rail Bridge	BNSF Bridges on Hinckley Subdivision	Hinckley	Condition	The BNSF line from Duluth to the Twin Cities has four single track bridges that need replacement. The cost to replace these bridges was estimated at $25 million.
S998	Stakeholder Consultation	Rail Bridge	BNSF Bridges on Hinckley Subdivision	Hinckley	Condition	The BNSF line from Duluth to the Twin Cities has four single track bridges that need replacement. The cost to replace these bridges was estimated at $25 million.
S999	Stakeholder Consultation	Rail Bridge	Grassy Point Bridge	Duluth	Condition	The Grassy Point Bridge between Duluth and Superior was built in 1912, and may need to be replaced in the future. A proposed replacement that could provide faster service between Superior and Duluth was estimated to cost $51 million.
SQ	D1 Action Items	Segment	Stebner Rd	DULUTH	Safety	Infrastructure, Safety
SS	D1 Action Items	Segment	State Highway 73	Entire Highway	Safety	Safety, Shoulders
ST	D1 Action Items	Segment	State Highway 210	Aitkin to Cloquet	Safety	Shoulders
SU	D1 Action Items	Segment	County Highway 21	Grand Rapids	Safety	Infrastructure/Safety
SV	D1 Action Items	Segment	US Highway 169	Hibbing to Virginia	Safety	Infrastructure, Maintenance, Safety
SW	D1 Action Items	Segment	State Highway 65	Bois Forte Reservation to	Safety	Safety, Shoulders, Passing Lanes

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
				Little Fork		
SX	D1 Action Items	Segment	State Highway 65	Bois Forte Reservation	Safety	Communication, Safety, Shoulders, Passing Lanes
SAC	D1 Action Items	Segment	US Highway 169	Aitkin (Heading South)	Safety	Safety, Shoulders
SAD	D1 Action Items	Segment	US Highway 169	Grand Rapids (Heading South)	Safety	Safety, Shoulders
SAE	D1 Action Items	Segment	State Highway 65	McGregor (Heading South)	Safety	Safety, Shoulders
SAF	D1 Action Items	Segment	State Highway 6	Deer Lake	Safety	Safety, Shoulders
SAG	D1 Action Items	Segment	US Highway 169	North of Grand Rapids	Safety	Infrastructure
SAH	D1 Action Items	Segment	State Highway 65	Calumet to McGregor	Safety	Safety, Shoulders, Passing Lanes, Maintenance
SAK	D1 Action Items	Segment	Rice Lake Rd	Duluth	Safety	Infrastructure, Safety
SAL	D1 Action Items	Segment	Caribou Lake Rd	DULUTH	Safety	Infrastructure, Safety
SAM	D1 Action Items	Segment	State Highway 194	DULUTH	Safety	Infrastructure, Safety
SAN	D1 Action Items	Segment	US Highway 53	DULUTH	Safety	Infrastructure, Maintenance, Safety
SAO	D1 Action Items	Segment	State Highway 38	Grand Rapids	Safety	Safety
SAP	D1 Action Items	Segment	State Highway 37	Hibbing	Safety	Infrastructure, Safety
SAS	D1 Action Items	Segment	County Highway 5	Meadow Brook	Safety	Infrastructure, Safety
SAT	D1 Action Items	Segment	County Highway 5	Hibbing (Heading North)	Safety	Infrastructure, Safety
SAU	D1 Action Items	Segment	County Highway 5	Hibbing (Heading South)	Safety	Infrastructure, Safety
SAV	D1 Action Items	Segment	County Highway 5	Meadowlands	Safety	Infrastructure, Safety
SAW	D1 Action Items	Segment	County Highway 5	Hibbing	Safety	Infrastructure, Safety
SAX	D1 Action Items	Segment	US Highway 169	Hill City	Safety	Safety, Shoulders, Passing Lanes
SBF	D1 Action Items	Segment	Airport RD	DULUTH	Condition	Maintenance
SBG	D1 Action Items	Segment	County Highway 70	ELY	Condition	Maintenance
SBK	D1 Action Items	Segment	Airport Rd	DULUTH	Condition	Maintenance
SBL	D1 Action Items	Segment	County Highway 7	Taconite to Big Fork	Condition	Maintenance
SBM	D1 Action Items	Segment	US Highway 53	Orr to	Condition	Maintenance

ID	Source	Type	Hwy	Location	Needs/Issue Type	Additional Information
				International Falls		
SBQ	D1 Action Items	Segment	US Highway 53	DULUTH	Condition	Maintenance
SBU	D1 Action Items	Segment	State Highway 1	Tower to Ely	Condition	Maintenance
SBX	D1 Action Items	Segment	Thompson Rd	Cloquet	Condition	Maintenance